

THE IRON AGE

THE NATIONAL METALWORKING WEEKLY

December 14, 1950

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As the white outline indicates, a standard unit of much greater frame size would be required to do the work of Speedaire. In fact, Speedaire is 37.2% smaller in cubic content, 12% lighter in weight and 14.5% lower in initial cost.

Photo by courtesy of
R. C. Mahon Co., Detroit

SPEEDAIRE reduces drive space 97%

THE drive formerly used on this vertical boring mill was a series of belts, pulleys and jack shafts. It took up more space than the mill itself and interfered with moving materials into and out of the machine. The new drive, the small, but powerful Speedaire in the lower left foreground, occupies less than 3% of the old drive space.

Speedaire is Cleveland's fan-cooled worm-gear speed reducer. Because it is fan-cooled, it does more work... will deliver up to *double the horsepower* of standard worm units of equal frame size, at usual motor speeds. It can be installed economically on many applications where other types have been used heretofore—giving you the advantage of a compact right-angle drive. Speedaire gives the same long, trouble-free service characteristic of all Clevelands.

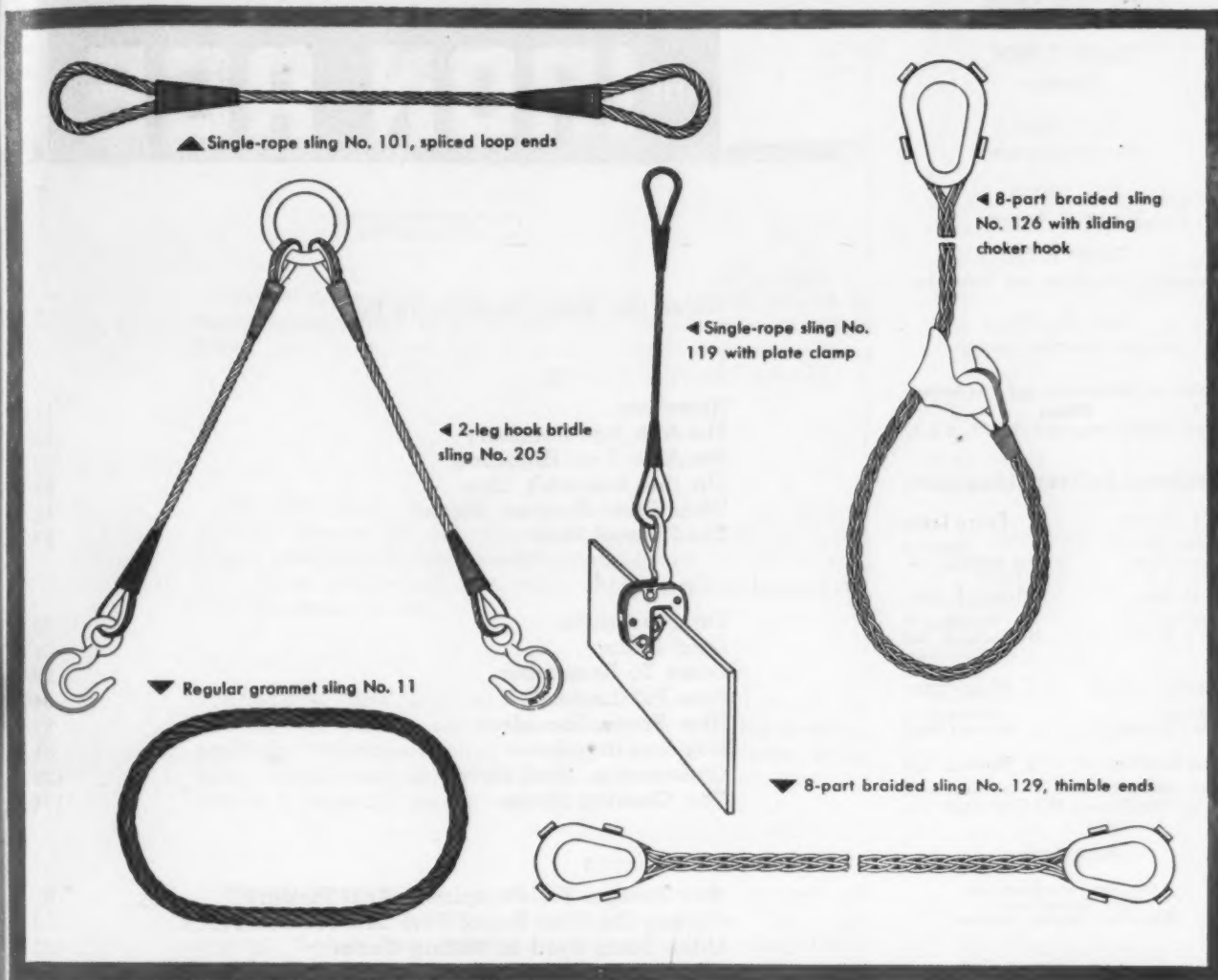
For full description, send for Catalog 300. The Cleveland Worm & Gear Co., 3252 East 80th St., Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers, Limited.



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Speed Reducers



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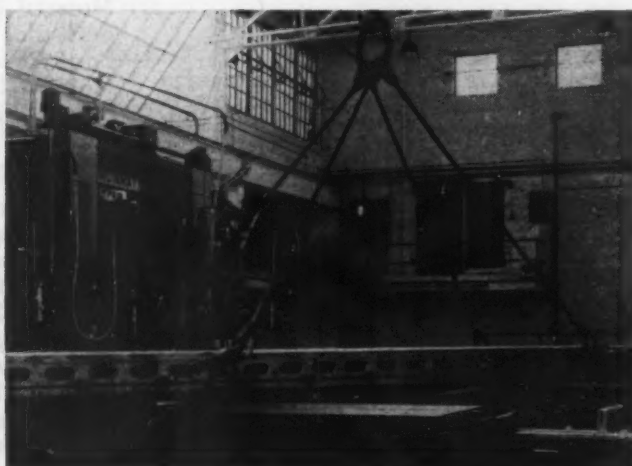
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When you purchase Bethlehem slings, you can depend upon them to carry the loads for which they're recommended.

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THE IRON AGE

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Special Article



Cost of phosphoric acid pickling can be cut 66 pct by a new process which reclaims the acid for re-use. In many cases, cost is below that of pickling with sulfuric acid.—p. 97.

Issue Highlights



The drill press is such a simple, common tool that it doesn't always get the attention more complex tools do. Many attachments and modifications, some of which you may have overlooked, can increase the versatility of your drill presses.—p. 100.



Adequate machinability and physical properties can be obtained in ductile iron without complete pearlite decomposition. Increased silicon content speeds carbide solution. Small amounts of carbide can be tolerated if the matrix is basically ferrite.—p. 105.



Material restrictions are already beginning to strangle auto production. Although steel is the toughest item, non-ferrous metals are causing plenty of worry, too. Independent producers are hardest hit.—p. 117.



Farm equipment makers who formerly favored free market distribution of steel are now beginning to favor the protection of a formal allocation system. Bigger food demands and a shrinking labor force make more mechanization necessary.—p. 119.



Jones & Laughlin Steel Corp will spend \$228 million for expansion in the next 2 years. Capacity will be increased by 1.5 million ingot tons. To help with financing, J & L is borrowing from General Motors and from banks.—p. 122.



The steel industry's modest price boosts are causing little fuss in Washington. The Economic Stabilization Agency doesn't believe it is necessary to take action (relating to steel increases) at this time.—p. 124.

Coming Next Week



Improved physical properties and reduced production costs through use of plain carbon steel instead of alloy grades were achieved by induction hardening axle shafts. Production was increased and some operations were eliminated by this method.

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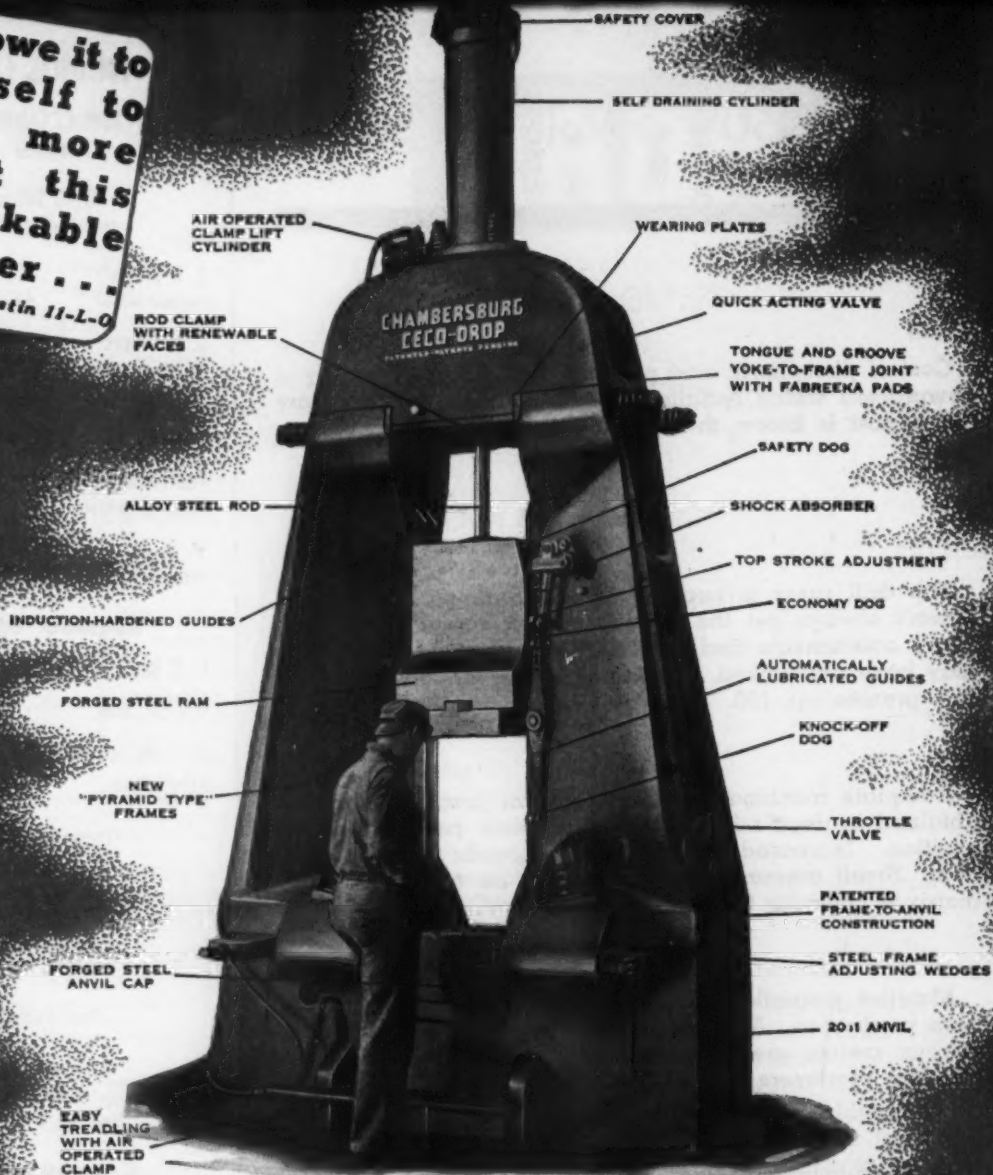
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Indexed in the Industrial Arts Index and the Engineering Index. Published every Thursday by the CHILTON CO. (INC.), Chestnut and 56th Sts., Philadelphia 39, Pa. Entered as second class matter Nov. 8, 1932, at the Post Office at Philadelphia under act of March 3, 1879. \$8 yearly in United States, its territories and Canada; other Western Hemisphere Countries \$15; other Foreign Countries \$25 per year. Single Copies 35¢. Annual Review Number, \$2.00.

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Editorial

INDUSTRY VIEWPOINTS

We've Got Some Thinking To Do

EVEN now there are people who don't know what a fix the free world is in. They can read. They hear the news but for some reason they can't grasp the seriousness of our plight.

Of course we don't want war. But we don't want the kind of slave living that comes with Soviet Communism. There are some things that are worse than death to a free people.

We are told that our standard of living may suffer because it costs money to become strong. So strong we don't have to weasel. So strong we don't have to appease. So strong the Russian rulers will know we mean business and that we are for freedom in action as well as on paper.

Sure our standard of living will suffer. Russia has two allies. One is deflation in the free countries and the other is inflation. Either one running amuck would mean success for communism. We need a balance. That will be the hardest nut of all to crack.

To get this balance we need the best brains and experience in government. We must have clear-cut thinking without jealousies, stupidity or red tape. We must have this within the framework of democracy.

If we prize freedom a drop in our standard of living should not be too high a price to pay for it. If we have to eat crackling instead of fancy bacon so what?

If last year's car must do a while can we do it? If our electric refrigerator still keeps the milk cold need we fret?

If we have to drink beer instead of 12-year-old stuff will we suffer too much? If the little woman can't have the latest furs will that cause a divorce? If the old man can't have a new sport coat will it spoil his score?

If we have three squares a day will it starve us if we can't work in the fourth at night. If we can't have fancy box top cereal will corn meal mush turn our stomachs?

If we give up a few things, save and pay taxes for freedom we will live another day to catch up on all the things we missed. If we don't win the battle for freedom then we won't need our standard of living. A corpse or a living automaton won't get much pleasure out of an ice box, gimcrack or gadget.

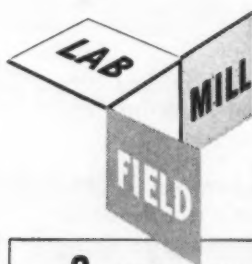
Tom C. Campbell

Editor

REPUBLIC Alloy Steels

A REPORT FROM
REPUBLIC STEEL'S
Alloy
METALLURGICAL FILES

Photo courtesy
The S. M. Jones Co.,
Toledo, Ohio



3-DIMENSION
Metallurgical Service

... combines the extensive experience and coordinated abilities of Republic's Field, Mill and Laboratory Metallurgists with the knowledge and skills of your own engineers. It has helped guide users of Alloy Steels in countless industries to the correct steel and its most efficient usage . . . IT CAN DO THE SAME FOR YOU.

Other Republic Products include Carbon and Stainless Steels — Sheets, Strip, Plates, Pipe, Bars, Wire

NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► If President Truman should declare that a state of emergency exists, things will move forward slowly. The main object will be to give the President psychological help on various powers, most of which he already has by law.

The emergency edict will not do much to eliminate the red tape or lead time on setting up specific defense projects. But it will appear to add urgency for price, wage and material restrictions.

► It looks as though the steel industry in the U. S. will have to furnish about 8000 tons of steel a month for the Canadian freight car building program. On the same track--there is a 70,000 ton U. S. locomotive program lurking in the background.

► A new steel continuous casting company is being formed; the plant may be in operation by late 1951. It is being designed to cast slabs at a rate of one ton per minute. The slabs will go into sheet and strip products.

► Some kind of wage control is expected after the first of the year but it may not be a definite ceiling freeze. Cyrus Ching hasn't got the men or the regulations to go into full control that soon. A formula may permit merit raises and revision of inequities—including room for the coal miners to get under the fence.

► Reductions in diameter of steel in drawing operations of as much as 66 pct in regular production and 78 pct in experiments have been obtained in a single press stroke. The process is the reverse of deep drawing: A ram forms a shallow cup, then literally turns it inside out as the draw continues.

The process itself is not new but these figures are remarkable because: (1) The original diameter in the above case was 14½ in.; and (2) the material was a high-strength low-alloy steel.

► Development of a stainless steel that will not use critical materials is a project that has just been given to an important research institute.

► Steel people hope it isn't so, but it looks as though the tight plate situation will force a general changeover on large continuous hot strip mills so they can roll lighter gages of plate as they did in World War II. For one thing, many qualified observers believe that shipbuilding must be expanded tremendously, though that project would not need additional steel for many months.

► A Midwest firm has developed king-size ammeters, wattmeters and voltmeters. Put at one end of a shop or power station they are big enough to be read at the other. Most such instruments in use today multiply readings from a conventional size meter onto a large dial, so any inaccuracies are multiplied. In the new instruments the electrical meter elements are of a size to match the meter dial.

► The big military requirements that should awaken the country to the emergency if nothing else does are several months away. There will be a lot of piecemeal ordering but the major slice of Mr. Truman's \$18 billion increase can't begin to be felt until about May 1.

► More limitation orders are expected. The steel industry is now curtailing nickel bearing steel; Washington may make it official. Cadmium, chrome and tin orders are in the talking stage.



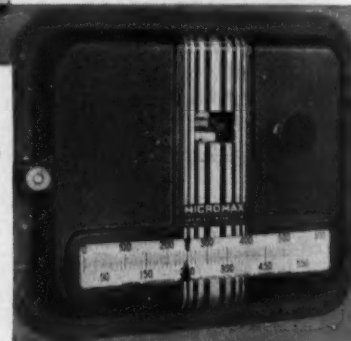
Dependable "ON-OFF" Controllers for Industry

THE kind of control instrument which industry calls on-off or 2-position is not only the oldest form of automatic regulator, but is one which many manufacturers still use, instead of more advanced types, for simple requirements. Usually, the instrument merely closes the valve when temperature reaches the control point, and opens valve again when temperature falls below point. The question of whether such on-off action is best for the given case can of course be settled by using the instrument with the best, most useful features. Here are some which L&N On-Off Controllers offer:

1. Instruments may be Recording Controllers with either strip-chart or round-chart, or Controllers with no charts at all.
2. Instruments can operate at high or moderate speed; can be located regardless of machine vibration, building tremors or distance from process.
3. Controls are outstandingly dependable because they "balance" temperature against a standard. Intermediate bearings and springs cannot increase, decrease or otherwise influence accuracy or sensitivity.
4. Low maintenance assured by machine-like design and construction.
5. More than 1000 standard ranges. Specials are available, but seldom needed.

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THESE instruments are fully automatic; need no standardizing; are ideal even for hard-to-get-at or difficult locations.

Acute Labor Shortage Feared

Price-Wage Controls Coming

New Highs —Scrap, Pig Iron **IRON AND STEEL INDUSTRY TRENDS**

The Iron Age

SUMMARY

THIS week many manufacturers find themselves suspended in a vacuum between their regular peacetime production and military orders. Their regular production is being strangled by material restrictions and defense orders are not coming fast enough to take up the slack.

The result is that a few firms have already found it necessary to lay off workers. Others may have to follow suit if they can't land some defense business. What these firms fear most is that they will lose experienced workers at a time when a critical labor shortage is just around the corner.

The pinch on skilled labor is already tight. In trying to gear up production the aircraft, freight car building and machine tool industries have already scraped the bottom of the barrel looking for welders, machinists, tool and die makers, etc.

New Steel Programs Coming

Several new steel allocation programs will soon be announced. A locomotive building program, now in the final planning stage, will take about 70,000 tons of steel per month during the second quarter. Canadian freight car builders are expected to get 8000 tons monthly. The petroleum industry and agricultural equipment makers will also get a share.

The petroleum people alone estimate next year's steel needs at 11.9 million tons. This program will probably be pared down to about 8 million tons before it is finally approved. But each new program that is added brings a controlled materials plan that much nearer. That it will come eventually is now a foregone conclusion. It will probably be put into effect sometime during the second quarter. It will take that long to collect the personnel needed to run it.

Price-wage controls are also only a matter of time. One thing holding them back now is that

there is no staff to administer them. When they come they will be on a selective basis, and they will probably hit scrap, nonferrous metals and steel in that order. If prices of some items start to get out of hand there is a chance that price controls on them might be placed in effect at once.

Some Necessary Loopholes

Wage controls will not be airtight. They will allow for a cleanup of fifth round demands. And they will permit elimination of inequities and allow some merit increases.

A high level meeting in Washington this week might result in a declaration of national emergency by the President. The defense production act of 1950 already gives him most of the powers which would result from such a declaration. Such a move would give the President psychological help on powers he already has.

This week the cry for steel is louder in all areas. Producers are still 1 to 2 months behind on deliveries, and DO orders are becoming more extended. Before the limits were raised on DO orders some producers had booked DO's on some items as far ahead as July. They believe that the higher limits will be filled quickly.

Scrap Composite at Record High

Prices of steelmaking scrap are higher in all areas. Increases at Pittsburgh, Philadelphia and Chicago raised THE IRON AGE steel scrap composite price by \$4.33 a gross ton to \$45.08 per gross ton.

Recent increases in pig iron prices have boosted the composite price \$3 a ton to \$52.69 a gross ton. Both the pig iron and scrap composite prices are now at an all-time high.

Steelmaking operations this week are scheduled at 101.5 pct of rated capacity, one point above the previous week.

(Nonferrous summary, p. 148)

Yoder High-Production Metal-Working Machinery

✓ TUBE MILLS

Electric resistance-weld and other types, combine low first cost, operating and maintenance cost with compactness, simplicity and high production of pipe and tubing from $\frac{1}{4}$ " up to 30" diameter. More Yoder mills are sold and in use than of all other makes of resistance-weld mills combined. 64-Page Book on Tube Making on request.

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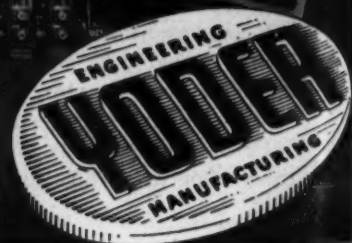
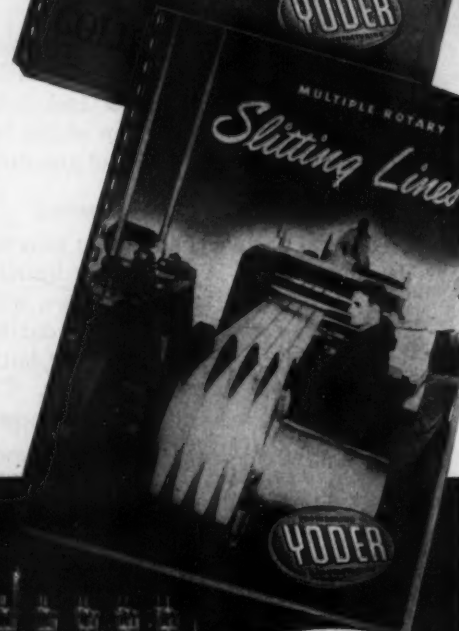
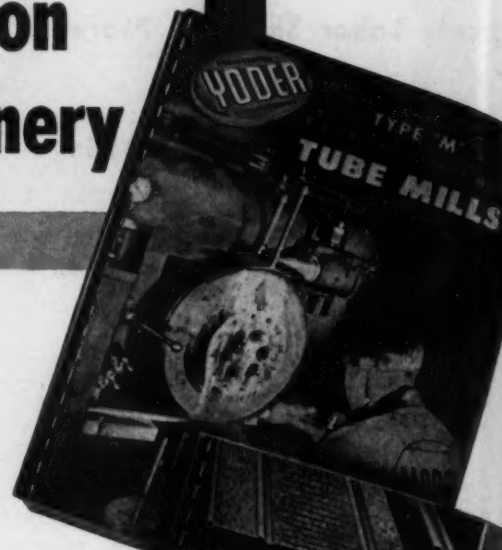
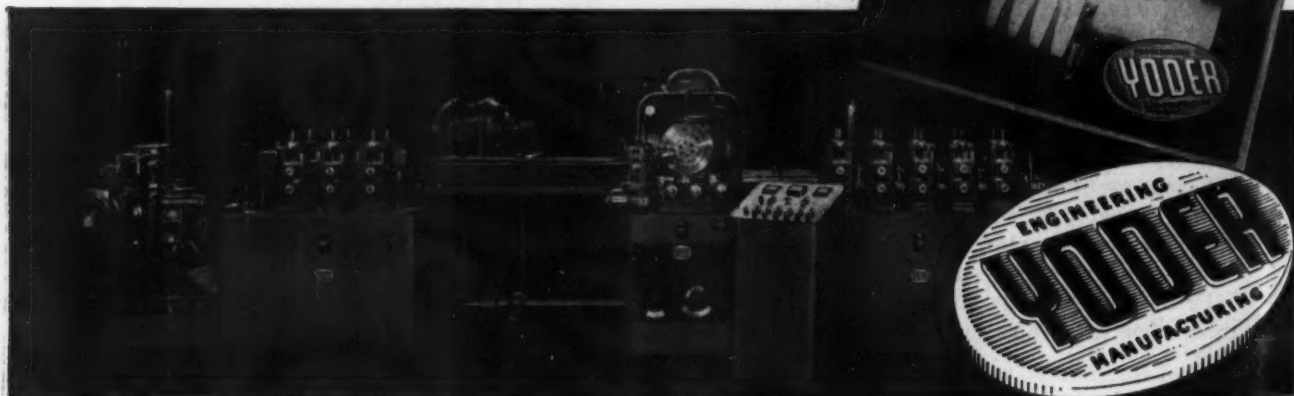
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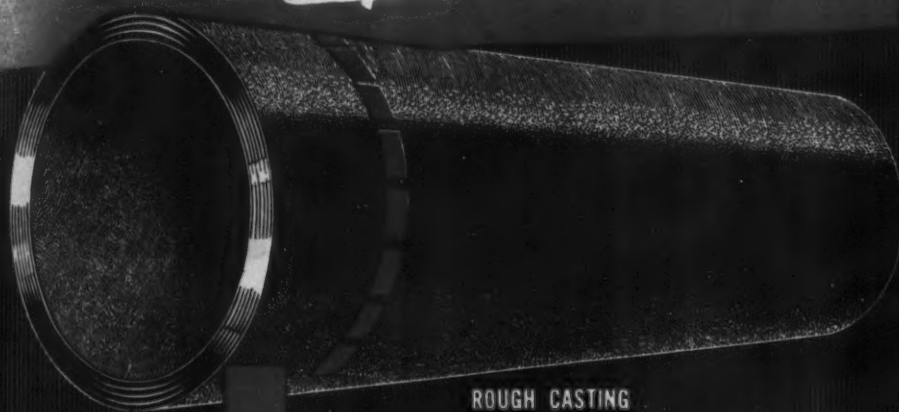
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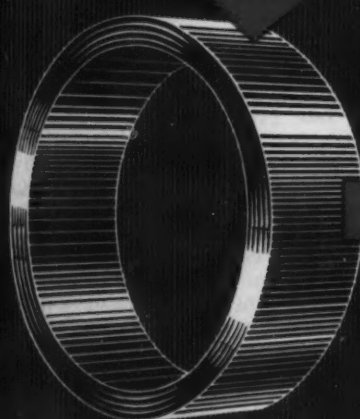
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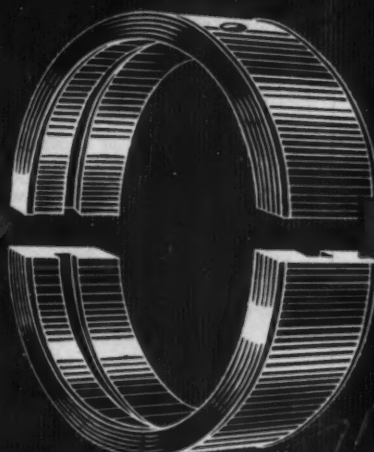
ROUGH *Right* AND READY



ROUGH CASTING

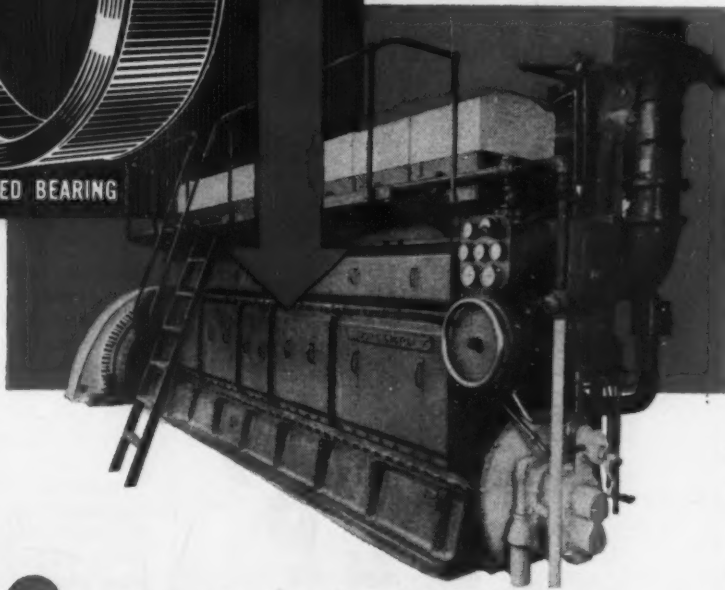


ROUGH MACHINED SHELL



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IN ROUGH FORM... "as cast"... ready for other specialists to fabricate or to finish—that's how we supply castings to a growing list of America's quality-minded industries.

These bearing backs, for example: Worthington Pump and Machinery Corporation uses them in their entire line of Heavy Duty Supercharged Oil, Gas and Dual Fuel Diesel Engines. We furnish the rough castings in random lengths of from 4 to 10 feet. Worthington finishes them — machines, tins and babbitts to their own specifications.

The result is a bearing shell with the following distinct advantages:

- 1 Metal mold centrifugally cast gray iron has high tensile strength and uniform grain structure highly satisfactory for tinning and babbitting the bearing face.
- 2 This soundness provides for uniformity of bond. Minimum babbitt thickness assures efficient operation and maximum bearing life.
- 3 Rough castings are annealed dead soft allowing maximum machining speeds and feeds for iron—keeping machining cost to a minimum.
- 4 The annealed gray iron centrifugally cast bearing back stock properly machined will not spring out of shape when split to make bearing halves.
- 5 In the event of babbitt failure, the cast iron back won't injure the journals of the crankshaft.

6 Losses incurred in finishing are held to a minimum.

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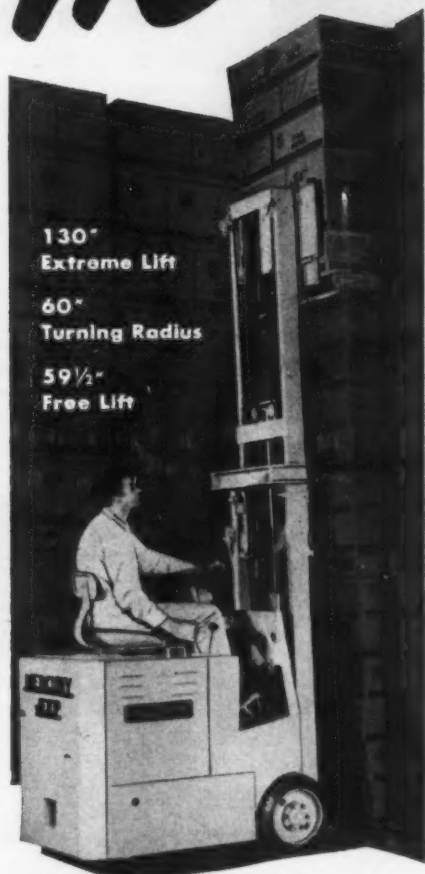
TYPES OF METAL CAST

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Alloy Steel—all grades.
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Gray and Alloy Iron—all standard and special analyses, including Ni-Hard and Ni-Resist.
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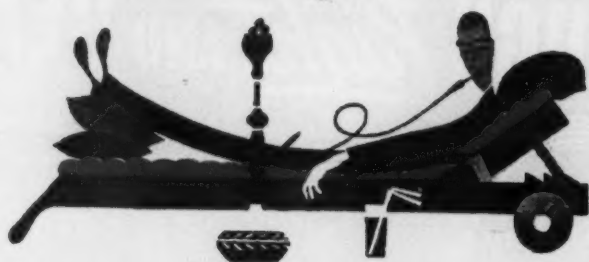
59½"
Free Lift

Mercury JEEP

MODEL 230
2000 LB. CAPACITY

Completely new and the most versatile fork truck of 2000 lb. rating. 130" extreme lift to permit full utilization of storage area... short 60" turning radius for greater maneuvering in narrow aisles and congested areas... ample "free lift" and many other improvements, that mean maximum operating efficiency at lower cost. Completely described in Bulletin 295. Request your free copy.

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4144 S. Halsted St. • Chicago 9, Illinois



Fatigue Cracks

By CHARLES T. POST

Hey, Charlie

Every once in a while we get an inkling of what the Social Security Administration must go through with its rows of files on William Smiths and John Joneses. For instance, a letter came in the other day from Lee Graybill, production superintendent of King-Seeley Corp. which went like this:

"During a recent conversation with Joe McGrath of Detroit, we were talking about the old days at Studebaker and Department No. 80. We were wondering about some of the old gang. . . . Joe remarked that you were connected with THE IRON AGE. . . . Well, Charlie, I am extending a cordial invitation to drop in for a visit if you ever are in this part of the country, and let's hear from you."

It was a sad duty to break the news to Lee Graybill that he had the wrong Charlie Post, because both Lee and his Charlie sounded like nice fellows. We explained how big the Charlie Post tribe seems to be. For years a Charlie Post was one of the top clowns with Ringling Brothers, and every time his picture appeared in the paper, friends sent it to us from all parts of the country. Almost everybody claims to have a friend or cousin named Charlie Post, and one store clerk slips us a discount on the strength of it. When we lived in San Francisco, there was another Charlie Post on the same street, but way at the other end, about 5 miles away. We were always trotting back and forth with each other's mail. The most eminent member of the tribe, perhaps, was Charles W. Post, who invented Post Toasties. He later fell to brooding, we understand, and came to a tragic end. As a child, we always felt that he, too, had gotten sick of Post Toasties.

We never had it so bad though, as our mother, Mary Post. In the same small California town where we spent our early youth there was another Mary Post who periodically was thrown in the jug for keeping a disorderly house. Mother never could quite explain to us moppets why this other Mary Post was in such bad odor with the law. We always warned mother that unless she kept the rugs swept, the beds made, and the dishes washed,

the cops would come around and say that our house wasn't orderly, either, and then there would be two Mary Posts in jail.

Puzzlers

Both C. E. Norton and John E. Toth have hastened to explain that the late great Charles P. Steinmetz's feat of mentally calculating the volume of material removed by drilling a 2-in. bar perpendicularly with a 2-in. drill does not rank with his greatest achievements. Says Mr. Toth, "The portion removed from the bar is divided equally into 8 parts, each of which resemble a special ungula of a right circular cylinder, the volume of which is $V = \frac{\pi}{6} r^2 H$. Since $r = 1$ and $H = 1$ the formula reduces to $V = \frac{\pi}{6}$ for one part and $\frac{\pi}{6} \times 8$ or $\frac{4\pi}{3}$ cu in. for the total volume removed." As Mr. Norton puts it, it's a matter of recognizing at a glance that the "volume of the slug bears the same relation to the volume of an inscribed sphere that the area of a square bears to the area of an inscribed circle, namely

4
— . . . no mathematics is required
 π
beyond the multiplication of
 $\pi \times \frac{4}{6} = \frac{2\pi}{3}$ "

On the 2-in. cube with three 1-in. diam holes, Mr. Norton suggests: "Start with 6 cylinders, 1-in diam and 1-in. long. On one end of each, mill 4 flat faces at 45° with the center line, forming a square pyramidal point. Save the upper portion and scrap the lower portion." From there, it's easy to work out the answer of approximately 3.2982 cu in. John P. Catlin of Remington Arms came to the same conclusion, but Mr. Toth declares it was 3.295 cu in. Mr. Toth cracked the oil drum problem, as did Walter Schroeder of Cincinnati Milling Machine Co. Several others cracked the formula, but slipped up later.

Last week's egg merchant made an average profit of 5/11¢ per dozen.

ATKINS



PRODUCTS

WISH YOU ALL A

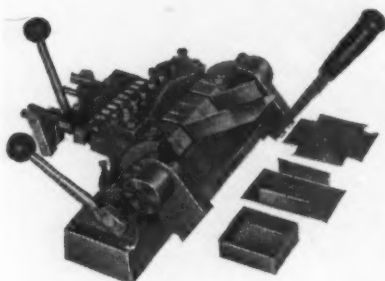
*Merry Christmas
AND
Happy New Year!*

E.C. ATKINS AND COMPANY
INDIANAPOLIS INDIANA

December 14, 1950

New! diacro BOX FINGER BRAKE

Four models 6" 12" 18" 24"
Capacity—16 Gauge Steel



3 TOOLS IN ONE

1 BOX and PAN BRAKE
2 STANDARD BRAKE
3 BAR FOLDER

One box or 10,000—can be economically produced with the versatile new Di-Acro Box Finger Brake.

Serves perfectly for all standard brake operations — an Acute Angle Bar converts the brake to a bar folder for locks, seams, hems and sharp angles.

The unique Di-Acro Open End Finger forms square or triangular tubes and other similar parts. The Box Finger Bar can be easily mounted on all standard Di-Acro Brakes.

Send For 40-Page Catalog

describing DI-ACRO Shears,
Punches, Benders, Brakes,
Notchers, and Rod Parters—
also Power Shears and
Benders.



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O'NEIL-IRWIN MFG. CO.

O'NEIL-IRWIN MFG. CO.
302 8th Ave., Lake City, Minn.
Please send 40-page catalog including "Die-Less
Duplicating" Engineering Service offer.

NAME
COMPANY
ADDRESS
CITY STATE

Dear Editor

Letters from Readers

Facts Issue Coming Soon!

Sir:

We have just been appointed general sales agents for the output of Mag-Iron Mining & Milling, Ltd. (subscribers to your publication), who own a large deposit of high grade magnetite in this province and produce a concentrate, in various size particles, which is of exceptional good quality, free from phosphorous and with only a trace of sulfur; when reduced, it makes an acceptable material for iron powder metallurgical processes in all its phases.

Can you give us any up to the moment statistics concerning the market for iron powder, its users, prices, market requirements, etc., and the same information regarding sponge iron, the resultant product after the concentrate has been reduced to a metallic state, i.e., after the oxygen has been driven off.

R. E. HOLLIDAY
Technical Advisor

Specialised Products & Sales
Toronto, P/Ont., Canada

Our annual Metal Industry Facts Issue of Jan. 5, 1950, presented various data on iron powders, their price and use. Similar material, brought up to date, will be included in the Metal Industry Facts Issue of Jan. 4, 1951. Current issues of THE IRON AGE report prices. So far as we know, similar data on the consumption and use of sponge iron is not available in statistical form, its use being limited and specialized. The Metal Powder Assn., 420 Lexington Ave., New York 17, is a group of metal powder producers in the U. S.—Ed.

For Statistical Info . . .

Sir:

For our economic history courses, we are preparing charts of production, consumption, export and imports of various commodities. Last year we prepared these charts showing the above data in the United States, the information for which was secured from the Statistical Abstract of the United States.

This year we are preparing similar charts which will show the data for Europe. We are primarily interested in England, France, and Germany. We are trying to secure, not only current data, but data in the historical perspective for as far back as possible (preferably 1850 or before). We would like to know if you would

have any information, or would know where we could possibly obtain such information on iron and steel.

C. E. MAYNARD
Graduate Assistant

Bowling Green State University
Bowling Green, Ohio

As central sources of statistical information on the iron and steel industries, the Industry Trade Assns. are probably the most satisfactory, and will save dealing with a number of scattered government agencies. For current production figures, and for recent years, we suggest consulting the annual statistical issues of THE IRON AGE.—Ed.

Rotarians Get Editorials

Sir:

The writer is a weekly reader of THE IRON AGE and very particularly of your weekly editorials. I am also proud to be a member of Rotary International and take a great interest in our local club.

There have been many times that I have felt the urge to use the information and very sound democratic principles you have brought out in your editorials and to pass these along in a mimeographed letter to include in our weekly Rotogram. I feel sure you want as many outstanding American businessmen to talk about and enlarge on your ideals as can be reached. With this in mind I am writing you to ask if this privilege of using your viewpoints with the credit given to THE IRON AGE may be granted. You can be sure it will be used to very good advantage.

F. J. WOOD
President

Peerless Steel Co.
Detroit

Increased Capacity Costs

Sir:

I was very much interested in a recent article appearing in the Survey of Current Business which pointed up plans of the steel industry to make a substantial increase in steel-producing facilities between now and the end of 1952. I believe the figures quoted represented an increase from 100.6 to 110 million tons of ingots per year.

Can you give me any idea of the capital expenditures involved in this expansion program for basic producers only, or give me a rough approximation of the amount of capital required to construct facilities capable of turning out some unit of primary steel, say capital required per ton or per thousand tons of output.

L. F. CHURCH
Mgr., Market Research

Emery Industries, Inc.
Cincinnati

Steel industry authorities have estimated the cost of building fully integrated steel capacity involved in the new expansion program at from \$250 to \$300 per ton of ingot capacity. This figure includes finishing as well as raw material and blast furnace facilities. Naturally, the figure would be lower if you took into consideration only the open-hearth and electric furnaces involved. However, this method is the one that is used in roughly figuring capital investment.—Ed.

MACHINE TOOL

High Spots



Sales
Inquiries
and Production



By W. A. LLOYD

Equipment Order Ratings—An application form for rating production equipment orders was issued this week by National Production Authority in Washington. The form, NPAF-2, is for use by military prime contractors and subcontractors in applying for the right to assign DO-98 ratings to specific orders for production equipment.

When an application on NPAF-2 has been approved, DO-98 may be used by military prime contractors and subcontractors in rating orders for production equipment for their own account. Such orders cannot be rated in the absence of specific authorization, however. Orders for production equipment placed directly by the military or by agents for the Dept. of Defense, or by military contractors for the account of the Defense Dept. will be assigned regular Dept. of Defense rating symbols.

Definition of Production Equipment—Instructions accompanying the form include the same definition of production equipment that was employed by the Munitions Board in its explanation of the use of certain DO rating symbols. No distinction is made between capi-

tal equipment, and maintenance, repair or operating equipment. Orders for both are probably ratable if specifically approved on the application form NPAF-2.

Criteria for Approval—The military may approve applications for the right to rate orders for production equipment if the contractor is employing suitable existing equipment, "to the fullest practical use on rated orders" and if the contractor is unable to obtain satisfactory delivery dates for new or used equipment on an unrated basis.

The Big Question—Among the questions asked on form NPAF-2 are history of attempts to obtain equipment on an unrated basis and a certificate to the effect that suitable equipment is being used to the "fullest practical extent on rated orders." "Fullest practical use" is not defined.

It is understood that this question is not intended to require that priority assistance be given only to firms doing 100 pct defense business. It is intended to require that contractors requesting priority assistance make a good faith determination that there are no reasonable alternatives to obtaining new equipment.

Copies of NPAF-2 will be available at field offices of the Dept. of Commerce and at local military procurement offices in the near future.

Boom of Orders—Around the country, a flood of new orders, foreign and domestic, rated and unrated, was pouring in the industry this week. A big break in the dike was the French machine tool program which was finally given au-

thorization. Dealers are placing the business for delivery during the last quarter of 1951. One company reported getting an order for the first 40 of 180 machines.

Placement of French business brings into sharp focus the ultimate size of the combined foreign programs, end of which is apparently not in sight. One guess made this week by a qualified expert put the total at \$300 million covering programs present and pending over the next 3 years.

Shortages Slow Output—While the industry is striving desperately to step up production, limited manpower and shortages of materials are holding shipments to less than \$30 million a month. Deliveries are greatly extended and, as a result, a certain number of companies in the industry need some working capital.

Some have been asking for a 25 pct down payment on the foreign orders, but have been turned down because ECA does not permit advance payment. However, such payments are currently under discussion.

It has been rumored that activation of the tentative emergency production schedules (pool orders or phantom orders) is being considered. If the pool orders should be released, accompanied by possibly a one-third down payment, the working capital problem would be solved.

Report on Portugal—In Cleveland, National Machine Tool Builders Assn. released a report on the machine tool industry of Portugal, revealing that production, which had been negligible, increased during the war, reaching a peak of 148 mechanical lathes, 37 shapers and 25 drilling machines a year. After the war, one of the principal producers of lathes discontinued manufacturing operations in 1946, and in 1949 production fell to 84 lathes, 27 shapers and 11 drilling machines.

In 1950, another company withdrew from machine tool production to concentrate on textile machinery and estimated production was reduced to 71 lathes, 15 shapers and 1 drilling machine.

FREE

USE POST CARD

PUBLICATIONS

Annealing Slide Chart

Annealing data for the principal analyses of alloy steels is contained in a convenient slide chart. Data for producing spheroidal structures in 40 alloy types, by both conventional and isothermal annealing processes, is on one side. The reverse side carries data for producing lamellar structures, also broken down by conventional and isothermal processes. This three-color chart is available upon request. *Republic Steel Corp.*

For free copy insert No. 1 on postcard.

Hydraulic Shear

How hydraulic operation of the Hydra-Shear packs power and control for true production shearing is explained on a new data sheet. The unit maintains high accuracy by holding minimum knife clearance on all gages and reducing curl and burring, as shown in the bulletin. Operation of the shear is described and specifications for three models are listed. *Johnson Machine & Press Corp.*

For free copy insert No. 2 on postcard.

Protects Metals

A new 4-p. bulletin describes and illustrates several applications of a process for protecting metals against heat oxidation, which increases life of these parts from 200 to 800 pct. One example cites untreated steel retort bottles used in magnesium production having a normal life of approximately 15 heats. When given this special metallizing treatment, these retorts reached 60 heats or more before retouching became necessary. This user has also reported increased life of one-ton foundry crucibles, which are subjected to

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

temperatures varying from 1700° to 1900°, from approximately 500 hr to as high as 2000 hr. *Metalizing Engineering Co.*

For free copy insert No. 3 on postcard.

Overhead Crane

Trambeam, a light crane and monorail system especially designed for low-cost handling of loads from 250 to 20,000 lb, is fully described in a new 20-p. catalog. The booklet is not intended to show technical details but rather to convey a summary of the reasons where and how the equipment may be economically used. *Whiting Corp.*

For free copy insert No. 4 on postcard.

Swing Check Valve

Complete instructions for use of G-A cushioned swing check valves are presented in a new 4-p. bulletin. Installation, operation and adjustment are dealt with in the folder, which also lists specifications and general materials used in the valve. Engineering and cross-sectional drawings are accompanied by a dimension table, and all component parts of the valve are identified. *Golden-Ander-son Valve Specialty Co.*

For free copy insert No. 5 on postcard.

For Inert Gas

The 2 new models of the Kemp Inert Gas generator, rated at 1000 and 2000 cu ft per hr respectively, are described in a new 4-p. bulletin. Seventeen leading features of

the unit are keyed to a drawing to show operation, and specifications are also presented. The generators produce inert gases by complete combustion of gaseous fuels and appropriate processing of the products of combustion, as shown in the folder. Other Kemp products are also listed. *C. M. Kemp Mfg. Co.*

For free copy insert No. 6 on postcard.

Flexible Shaft Bulletin

A new 12-p. booklet outlines the basic principles of flexible shaft selection and application. The bulletin includes the latest developments in flexible shafting and is illustrated with drawings, photographs and tables showing construction details and performance data of both power drive and remote control types. Instructions are given on how to select flexible shafts for specific applications. Also included is a description of the variety of sizes and types of flexible casings available. *S. S. White Industrial Div.*

For free copy insert No. 7 on postcard.

Hydraulic Cylinders

A complete standard line of double acting, single acting, telescopic oil hydraulic cylinders of the heavy duty type, suitable for operating pressures up to 1500 psi, are presented in a new 56-p. catalog. Full details covering many different types of mountings, style of fittings, ratings, dimensions and

Turn to Page 134

Contact **KAYDON** of Muskegon

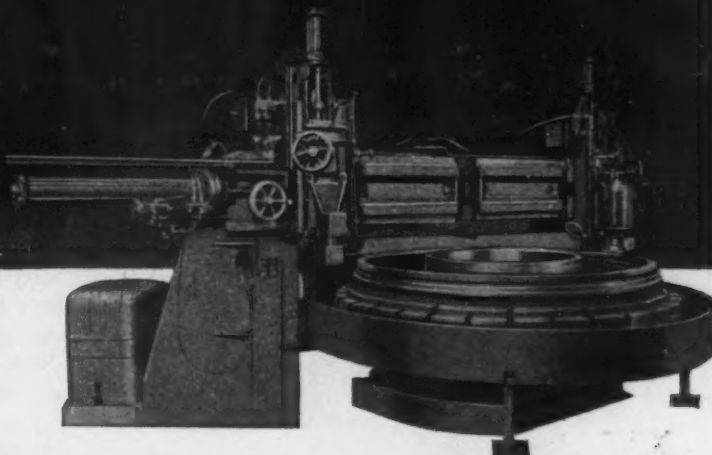
FOR ALL TYPES OF BALL AND ROLLER BEARINGS 4" BORE TO 120" OUTSIDE DIAMETER



KAYDON Double Row Taper Roller Bearing, 34.000" x 42.250" x 7.375", permits smooth, precision operation of the table spindle on the big 120" capacity double-head, heavy-duty super precision grinder shown at right.

BIG PRECISION GRINDER

...calls for Big Precision Bearings
... and KAYDON answers "O.K."



THIS double head grinder permitted production of super precision accuracy in Naval gun mounts. It was designed to produce work of an angular accuracy of less than one-half thousandth (.0005") in 72", in flatness, squareness, concentricity, roundness and taper, and permitted interchangeability of gun mount parts which formerly were tediously hand scraped. Parts produced in regular production to an accuracy of .0002".

We believe this to be the world's largest, super precision industrial grinder, 26 of which were manufactured.

In heavy oil field machinery, ponderous steel-mill equipment, complicated paper-mill units... in rugged

road-building machines, excavators, hoists, crushers... powerful bending machines, production units, and other industrial equipment... KAYDON bearings are improving performance and lengthening service-life. Look to KAYDON, Standard or Special, for the better bearing service your equipment deserves.

* * * *

Counsel in confidence with KAYDON. Capacity now available for all sizes and types of KAYDON bearings... and for atmospheric controlled heat treating, precision heat treating, salt-bath and sub-zero conditioning and treatment, microscopy, physical testing and metallurgical laboratory services.

KAYDON

THE **KAYDON** ENGINEERING CORP.

MUSKEGON • MICHIGAN

KAYDON Types of Standard or Special Bearings:

Spherical Roller • Taper Roller
Ball Radial • Ball Thrust
Roller Radial • Roller Thrust

December 14, 1950

NEW

PRODUCTION IDEAS

Continued

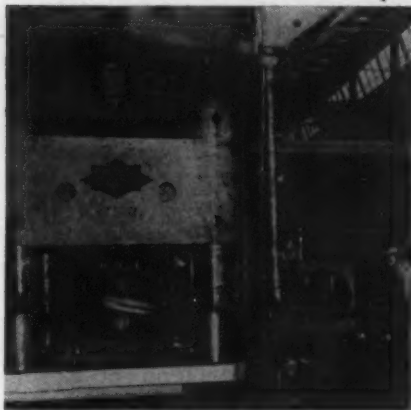
impact strength and crack-proof steel-bar feet. Ball or split-sleeve type bearings provide long wearing qualities, and are easily accessible for inspection and maintenance. *Electric Machinery Mfg. Co.*

For more data insert No. 23 on postcard, p. 35.

Hydraulic Press

Versatile press hot presses or cold forms variety of parts.

A 5000-ton hydraulic press which features unusual flexibility of operation is single-action, with both pushbutton and manual control. It is open four-column construction, arranged for rapid advance to the work. A quick reversal feature makes its operating cycle desirable for hot forging work, minimizing wear and tear of the dies by avoiding prolonged contact of the hot metal with the dies. Designed



originally for cold rubber-pad forming of sheet metal parts used in airplane frame construction, the press is now making hot-forged parts for earth-moving equipment. Its large reserve capacity permits it to be adapted to many purposes. *Birdsboro Steel Foundry & Machine Co.*

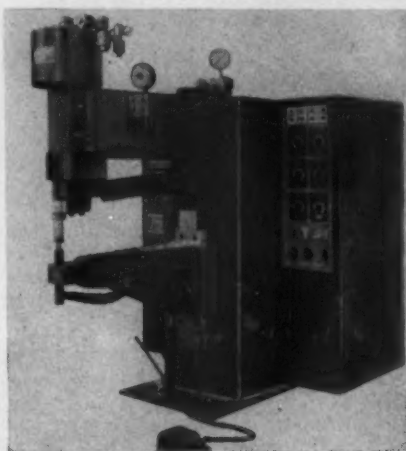
For more data insert No. 24 on postcard, p. 35.

Spot Welder

Adjustable for welding aluminum, ferrous and nonferrous alloys.

A new resistance welder for spot welding can be quickly and easily adjusted to welding aluminum, magnesium, stainless steel, Inconel,

Monel, brass, mild steel and other alloys by change of control settings, and will handle various thicknesses of each. Welding speeds are said to be greater with this new welder and because it is a three-phase welder it can be used where there are power limitations. The PMCO2ST resistance spot welder



is a press type machine rated at 100 kva at 50 pct duty cycle; operates on 220 and 440 v three phase, 60 cycle current. Standard throat depth is 36 in. Welding on low carbon steel is from 0.022 to 0.156 in. (two thicknesses) and on aluminum and magnesium alloys a range from 0.025 to 0.081 in. Ranges for other metals vary. *Sciaky Bros.*

For more data insert No. 25 on postcard, p. 35.

Raintight Multi-Breakers

1 through 20 circuits; approved by Underwriters for outdoor use.

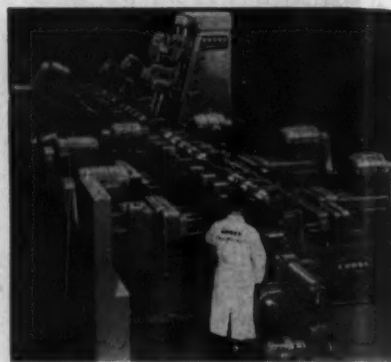
A complete line of raintight multi-breakers have formed and welded galvanized steel enclosures. Conduit hubs are furnished in a variety of sizes in the top, and all knockouts in the sides, bottom and back are below the lowest electrical part. They are equipped with thermal-magnetic operating mechanism, give positive protection against dangerous overloads and act instantaneously on shorts. Similar multi-breakers are available for indoor use with combinations from 1 through 42 circuits. *Square D Co.*

For more data insert No. 26 on postcard, p. 35.

Special Machine Tool

Finishes 85 automatic transmission cases per hr at 100 pct efficiency.

A new Transfer-matic machine drills, chamfers, reams and taps 32 holes in the ends, sides and tops of



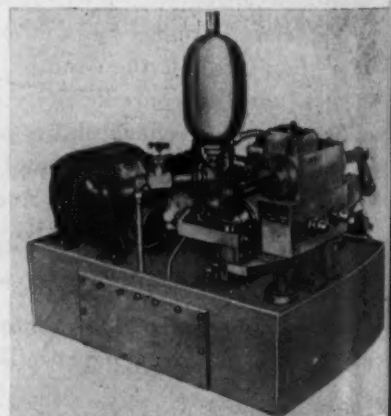
automatic transmission housings. The operations are conducted at 28 stations. The first station is for loading and is followed by 7 drilling and 5 idle stations for the ends; 1 for indexing; and 10 drilling and 4 idle stations for the sides and top. Eighty-three tools are used. Only one unskilled operator is required, the parts moving automatically from station to station. The machine uses the Cross machine control unit with Toolometers. *Cross Co.*

For more data insert No. 27 on postcard, p. 35.

Flash Welder Control

Converts mechanically driven flash welders to hydraulic operation.

A low priced control known as Hydra-Flash has been developed for use with any make flash welder,



new or used, having transformer capacity up to 500 kva. It is a fully hydraulic unit with adjustments calibrated, making duplication of setups as easy as turning a dial. Hydra-Flash is said to greatly ex-

Turn to Page 138

New ladle crane carries 300-ton loads— keeps 'em rolling with TIMKEN® bearings

THIS giant new ladle crane was designed and built by The Morgan Engineering Company to handle loads up to 300 tons. To insure dependable, trouble-free service under tremendous loads, the crane is equipped with 286 Timken® tapered roller bearings at vital points. As a result, maintenance on the new crane will be almost negligible, and the possibility of production delays from bearing trouble

is minimized.

Made of Timken fine alloy steel, Timken bearing rollers and races have a hard, wear-resistant surface, and a tough, shock-resistant inner core. The line contact between rollers and races provides extra load capacity. Tapered construction enables Timken bearings to carry both radial and thrust loads, holding shafts in alignment and preventing wear on related parts. Under normal

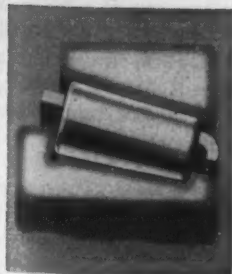
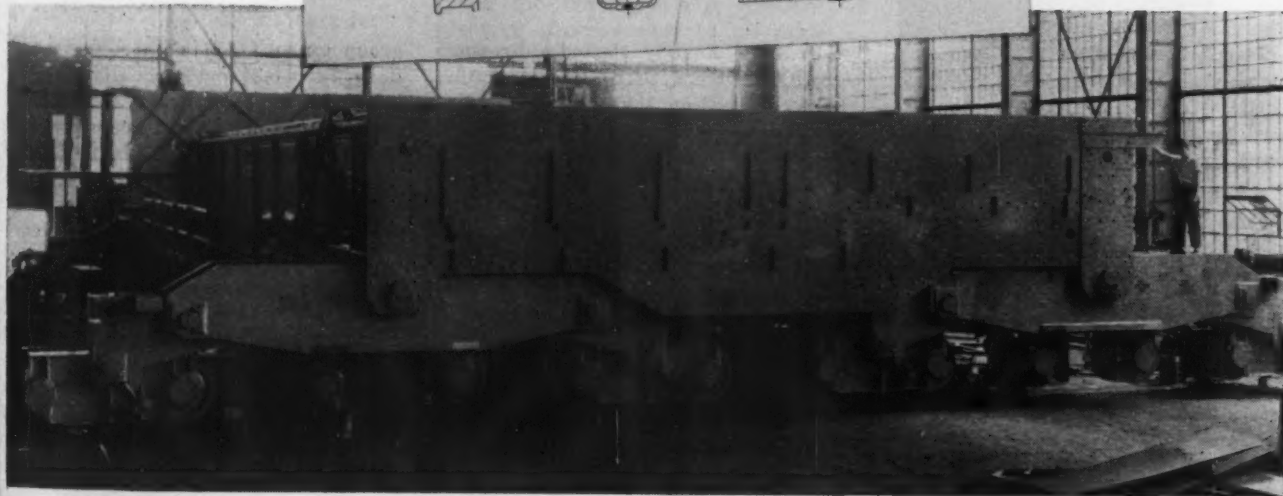
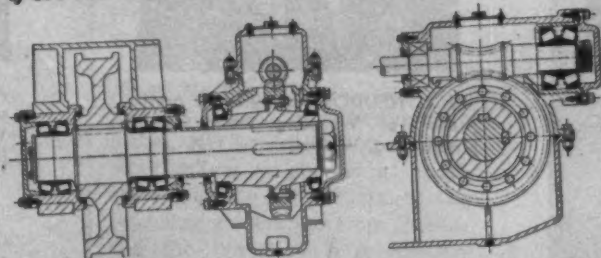
conditions, Timken bearings last the life of the machine in which they are used.

Insist on Timken bearings in the machines you buy or build. Remember, the trade-mark "Timken" is your guarantee of value. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.

HOW THE MORGAN ENGINEERING COMPANY
uses Timken bearings in bridge track wheels and drives. A total of 286 Timken bearings are used throughout the crane.



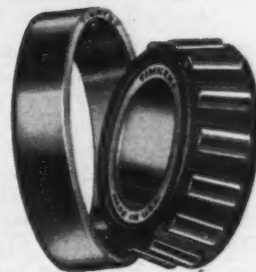
GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER □ BEARING TAKES RADIAL ○ AND THRUST → ○ ← LOADS OR ANY COMBINATION ☼

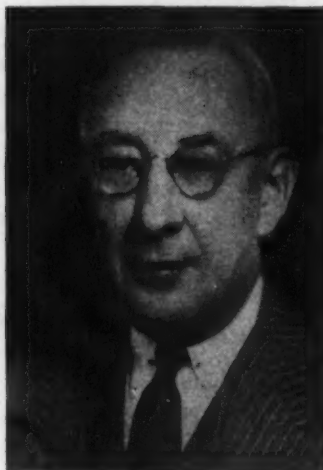
December 14, 1950

Iron Age

Introduces



WILBUR R. LEOPOLD, appointed assistant vice-president of Worthington Pump & Machinery Corp., Harrison, N. J.



J. L. NEUDOERFER, elected president of Wheeling Steel Corp., Wheeling, W. Va.



ALEXANDER ZEITLIN, named vice-president of Hydropress, Inc., New York and Loewy Construction Co., Inc., New York.

Joseph H. Woodward II, elected a member of the board of **WOODWARD IRON CO.**, Woodward, Ala., to succeed his father, the late A. H. Woodward.

Fred M. Garland, named assistant to the president and general traffic manager of **PRESSED STEEL CAR CO.**, Pittsburgh.

Myles L. Mace, chairman of the U. S. Dept. of Commerce Small Business Advisory Committee, and **George M. Hansen**, president of the National Federation of Financial Analysts, appointed directors of **BETTINGER ENAMEL CORP.**, Waltham, Mass.

Roy C. Ingersoll, president of Borg-Warner Corp., Chicago, elected a director of **KELSEY HAYES WHEEL CO.**, Detroit.

Leonard Happ, elected vice-president in charge of purchases for **T. E. CONKLIN BRASS & COPPER CO.**, New York. Mr. Happ has been with the firm for 40 years. **Bruce C. Conklin** and **Theodore B. Conklin, Jr.**, elected assistant treasurers.

Dr. R. H. Boundy, elected a director of **DOW CHEMICAL CO.**, Midland, Mich., succeeding **John S. Crider**, who resigned.

Glen McDowell, formerly roll sales manager, Aetna Standard Engineering Co., has joined the roll sales force, Lewis Foundry & Machine Div. of **BLAW-KNOX CO.**, Pittsburgh. **W. B. Hackett**, appointed assistant to the president in charge of engineering; **C. W. Baker** manager, contract engineering; **A. C. Fisher**, manager, sales engineering and service; and **G. T. Andrews**, manager, machinery sales.

M. E. Coyle, resigned as an executive vice-president and member of the board of directors of **GENERAL MOTORS CORP.**, Detroit, effective Dec. 31. Mr. Coyle has been associated with the company for 39 years. **Louis C. Goad**, will succeed Mr. Coyle as executive vice-president in charge of the car and truck group, body and assembly divisions group, and the accessory group. **John F. Gordon**, elected a director and a member of the administration and operations policy committees. He will succeed Mr. Goad as

group executive in charge of Fisher Body, Ternstedt and Buick-Oldsmobile-Pontiac assembly division. **Charles A. Chayne**, made vice-president in charge of the engineering staff. **Carl H. Kindl**, **Harry J. Klingler** and **Cyrus R. Osborn**, named directors and members of the operations policy committee. **Henry C. Alexander**, elected to the financial policy committee.

William F. Lewis, named a vice-president, and **Stephen G. Harwood**, formerly district sales manager in New York, appointed sales manager of **MONTREAL LOCOMOTIVE WORKS, LTD.**

Harold R. Potter, named sales manager, Cleveland district, for **CARPENTER STEEL CO.**, Reading, Pa. Mr. Potter succeeds **James S. Bailey** who has been made assistant to the vice-president in charge of sales.

E. A. Erickson, appointed manager of the Hornell, N. Y., plant of **SKF INDUSTRIES, INC.**, Philadelphia. Mr. Erickson has been with the company for 38 years. **Harry R. Fillmore**, promoted from general foreman to assistant plant manager.

Merritt W. Jones, appointed manager for the newly created Baltimore sales district of SIGNODE STEEL STRAPPING CO., Chicago.

Robert T. Daily, promoted to the position of field engineer in charge of the Chicago office for LORD MFG. CO., Erie, Pa.

Robert M. Clark, named representative of the president in Washington, effective Jan. 1, for the SANTA FE RAILWAY CO., Chicago.

James E. Blue, formerly assistant sales manager and Ohio branch manager of TRUSCON LABORATORIES, Detroit, named manager of the Michigan branch. Mr. Blue has been with the firm for 35 years.

Chet Borlet has joined the sales and service staff of UNITED CHROMIUM, INC., New York.

Charles B. McCoy, appointed assistant general manager, Electrochemicals Dept. of E. I. du PONT de NEMOURS & CO., INC., Wilmington, Del. Mr. McCoy succeeds Donald O. Notman, who was made general manager, Electrochemicals Dept.

T. F. Riddle has joined LUSCOMBE AIRPLANE CORP., Dallas. Mr. Riddle was formerly factory manager for Huey & Philp Co., Dallas.

James H. Jones, appointed sales representative, San Antonio district office of ALLIS-CHALMERS MFG. CO., Milwaukee. Frank Barilla, named water conditioning sales representative, Cleveland district office.

Julian G. Tabor, in charge of the Hartford office of BROWN & SHARPE MFG. CO., Providence, R. I., has retired after 45 years with the firm. Herbert Richardson will succeed Mr. Tabor as Hartford representative. Henry D. Sharpe, Jr., elected a vice-president, and Paul R. Hatch, an assistant secretary.

Leon C. Swager, assistant to works manager, named in charge of wage rate administration for the Fort Wayne Works, GENERAL ELECTRIC CO., Schenectady. S. B. Fuerst, appointed supervisor of methods and equipment, Fitchburg Works.

Eugene Mowlds, Jr., appointed assistant general contracting manager of AMERICAN BRIDGE CO., Pittsburgh. He has been with the company for 29 years.

Iron Age *Salutes*

RICHARD E. Le BLOND

IF, as somebody has said, the world belongs to a patient man, Richard E. LeBlond, recently-elected president of National Machine Tool Builders Assn., will some day have title to a lot of acreage.

He is president of the R. K. LeBlond Machine Tool Co., one of the world's largest manufacturers of lathes. His knowledge of his company, where he started as a machine operator in 1922 immediately following graduation from Purdue, and the industry, is a constant source of amazement to his associates.

Born in Cincinnati in 1900, he has a keen interest in the machine tool industry and in its advancement.

Behind his calm exterior lie the qualities of direction, clarity of purpose, an affinity for detail and a 24-hr-a-day interest in his plant and its operation. His constant search for improvement in his company's products is tempered by a well-developed sense of caution.

One of Mr. LeBlond's associates said of him recently, "Rich has the judicial mind," an attribute which Xavier University, Cincinnati, saw fit to recognize formally by awarding him an honorary LL.D. in 1948. A less-articulate friend has said, "Rich has his flywheel on the engine all the time."

A family man with a wife and five children, his moments of relaxation are devoted to golf (he shoots in the low eighties), yachting and farming.

His business and civic accomplishments comprise an imposing list. He is a director of the R. K.



LeBlond Machine Tool Co., Cleveland Automatic Machine Co., Cincinnati Electrical Tool Co., Multi-Colortype Co., Printing Machinery Co., Security Storage Co., Fifth-Third Union Trust Co., all of Cincinnati, and the Ohio Mechanics Institute of Cincinnati.

He is a member of the executive committee of the Machinery & Allied Products Institute, a member of the Engineering Society of Cincinnati, the American Society for the Advancement of Management.

He served in the government relations committee of the National Machine Tool Builders Assn. and on the Civilian Officer Naval Procurement Board in World War II.

His election to the presidency of NMTBA puts him at the helm of one of the nation's key industries, in what may prove to be one of the great crises in history. His sincerity and considered judgment will be potent assets in the job that lies ahead.



JAMES C. HAMILTON, appointed assistant to vice-president-contracting, of American Bridge Co., Pittsburgh.

Walter H. Sarraf, appointed to the Pittsburgh district sales staff of **HARBISON - WALKER REFRAC - TORIES CO.**, Pittsburgh.

R. E. Florine, appointed district manager for the new district sales office in Seattle of the **WHITING CORP.**, Harvey, Ill. **A. C. Kukral**, named resident sales engineer at the new sub-sales office in Cleveland.

C. A. Gordon, appointed representative in Buffalo for **LACLEDE-CHRISTY CO.**, St. Louis.

Ray A. Bland has joined the sales engineering department of **SUTTON ENGINEERING CO.**, Bellefonte, Pa. He was formerly associated with the sales department, **United Engineering & Foundry Co.**, Pittsburgh.

Dan C. Swander, Jr., named sales manager of **COLUMBIAN VISE & MFG. CO.**, Cleveland. Mr. Swander will continue as vice-president.

Clarence Stanley, named a member of the financial staff of **GENERAL MOTORS CORP.**, Detroit.

Raymond M. Lyons, named industrial relations manager, Lincoln plant, Lincoln-Mercury Div. of **FORD MOTOR CO.**, Dearborn.

Harold L. Greenhut, appointed project engineer of **ROTOR-CRAFT CORP.**, Glendale, Calif.

Erle I. Shobert II, made supervisor of the electrical laboratories of **STACKPOLE CARBON CO.**, St. Marys, Pa. Mr. Shobert will continue as technical director, rare metal contacts and nonferrous metallurgy.

C. F. Duff, formerly representative in Cleveland for **MORSE TWIST DRILL & MACHINE CO.**, New Bedford, Mass., named district manager of Ohio and Indiana. **A. E. Boot** and **Harold Symes** will now represent Morse in the Cleveland territory.

Earl C. Blaine, appointed plant manager and **Robert J. Kalbfleisch**, assistant works manager of the **BUDD CO.**, Philadelphia.

J. J. Thompson, named manager of the sales personnel and training division of **WORTHINGTON PUMP & MACHINERY CORP.**, Harrison, N. J. He has been associated with the firm for 17 years.

Walter A. McLean, named manager of erection of the **INDUSTRIAL BROWNHOIST CORP.**, Bay City, Mich., replacing the late **John J. Schreck**.

Daniel E. McBride, appointed treasurer of **PAUL & BEEKMAN, INC.**, Philadelphia. Mr. McBride succeeds **J. E. Schmidt**, who was promoted from secretary-treasurer to secretary-controller.

William A. Callison, vice-president in charge of western regional sales of **AMERICAN LOCOMOTIVE CO.**, Schenectady, assigned in charge of eastern regional sales.

George A. Hinckey, appointed sales manager, New York factory branch of the **AUTOMATIC TRANSPORTATION CO.**, Chicago.

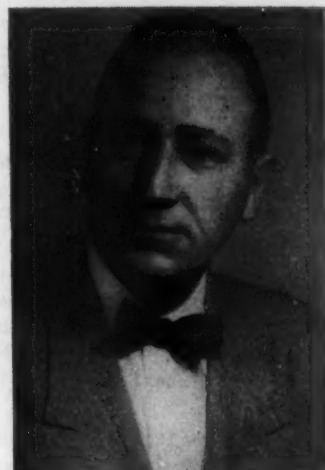
John W. Pennington, former staff engineer for the Caterpillar Tractor Co., named chief engineer, Piston Ring Dept. of **KOPPERS Co., INC.**, Pittsburgh.

Ellis C. Wester, named sales manager, Cutting Tool Div., **CHARLES H. BESLY & CO.**, Chicago, and **Hal Seger**, named manager, of drill and reamer sales.

Bert Cole, formerly general manager of **Crosley Distributing Corp.**, New York, has rejoined the **PHILCO CORP.**, Philadelphia, as district sales representative for the New York-Newark area. Mr. Cole succeeds **Clare Courtney** who was appointed sales manager of the Accessory Division.

C. E. Leshner, for the past 27 years associated with the **PITTSBURGH CONSOLIDATION COAL CO.**, Pittsburgh, has retired.

Edward J. Gardner, formerly superintendent of blast furnaces and coke ovens, made assistant to **Hjalmar W. Johnson**, vice-president of **INLAND STEEL CO.**, Chicago. **Lee B. Luellen**,



WALTER C. FOOTE, appointed sales manager of **Dearborn Gage Co.**, Dearborn, Mich.

named assistant general superintendent in charge of primary operations and mills; **J. Foster Mayberry**, assistant general superintendent in charge of the flat rolled departments. **Theodore F. Plimpton**, formerly blast furnace superintendent will replace Mr. Luellen as assistant general superintendent in charge of industrial relations. **M. M. McClure**, promoted to administrative assistant to Mr. Plimpton. **William A. Blake**, promoted to director of community relations; **James F. Peters**, made superintendent of blast furnaces; and **William C. Kostbade**, superintendent of the hot strip mills.

A. W. Plier, elected executive vice-president and general manager of **D. J. MURRAY MFG. CO.**, Wausau, Wis. **D. J. Everest**, made vice-president; **C. L. Durkee**, director, vice-president and sales manager; **W. A. Marquardt**, secretary; **P. W. Hooper**, assistant secretary; and **Grover Keeth**, assistant treasurer.

OBITUARIES

Frank J. Itts, 54, assistant supervisor of employment, Youngstown district, Youngstown Sheet & Tube Co. Youngstown, died Dec. 3.

Clifford B. Cornell, 63, assistant director of personnel, Chrysler Corp. Detroit, died recently.

L. W. Copeland, Detroit manager of **Jones & Lamson Machine Co.** Springfield, Vt., passed away recently.

Henry P. Kerber, former official of **Gulf States Steel Co.**, Birmingham, died recently.

Charles Englehard, 83, president of **Baker & Co.**, Newark, N. J., died recently.

SEVEN STRONG REASONS

Appreciation of its many advantages explains the trend to N-A-X

HIGH-TENSILE steel by manufacturers of commercial vehicles.

→ HIGH STRENGTH ←

→ HIGH FATIGUE RESISTANCE ←

→ GOOD FORMABILITY ←

→ FINER GRAIN STRUCTURE ←

→ GREAT IMPACT TOUGHNESS ←

→ EXCELLENT WELDABILITY ←

→ HIGH CORROSION RESISTANCE ←



MAKE A TON OF SHEET STEEL
GO FARTHER

Specify-

N-A-X

HIGH-TENSILE STEEL

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division, Ecorse, Detroit 29, Michigan

NATIONAL STEEL



CORPORATION

December 14, 1950

On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

**Auto industry begins streamlining for defense production . . .
Nonferrous shortage blow to Detroit . . . Controlled Materials
Plan coming . . . U. S. Asks GM, Ford to hold prices.**



By **WALTER G. PATTON**

Credit Rule Hits—Detroit automobile manufacturers last week began an all-out campaign to hold auto production in high gear. K-F has already been hit hard enough by Regulation W and got help from RFC. Other independent producers are deeply concerned about credit restrictions. Meanwhile, Nash opened a Washington office, indicating the company is streamlining its organization to take on whatever war contracts may be available.

Also, last week M. E. Coyle, GM executive vice-president, resigned unexpectedly ahead of his scheduled retirement. The prospect of shifting huge GM from a peacetime to a war economy undoubtedly contributed to Mr. Coyle's decision to retire.

Unemployment Threatens—The U. S. move toward a war economy

is going ahead fast enough so that the threat of widespread unemployment in the automobile industry has become very real.

Tooling orders are already running out in Detroit die shops. Detroit is just winding up its greatest year both from a standpoint of total vehicles produced and value of product. As we go to press, some local automobile executives will settle for 1951 output at about half the 1950 rate.

Nonferrous Shortages—There is much talk here about shortages of nonferrous materials. Observers see the new limitation on copper as a serious blow to the industry. Many hardship cases are expected in the wake of the 35 pct reduction in aluminum.

As usual, the industry is juggling its available material with considerable success. General Motors, for example, is reported to have switched aluminum from its Frigidaire Div. to some of the car and truck divisions. Cadillac and Oldsmobile which use aluminum pistons are expected to be hardest hit by the aluminum order. Meanwhile, Chevrolet and Pontiac have happily continued in 1951 the use of cast iron pistons.

Companies Disagree—There is some difference of opinion in the automobile industry between large and small companies about allocating available materials.

Most small companies would

have preferred an across-the-board percentage cut in automobile production. Large companies favor a percentage reduction in available materials. This gives them an opportunity to juggle materials, making possible maximum output under government restrictions.

See Controlled Materials—The feeling in Detroit seems to be that sooner or later a controlled materials plan will be set up. When this happens, there will be government decisions about essential and non-essential industries.

Larger automobile circles feel that many vendors classified as non-essential may be switched to meet essential transportation needs, permitting optimum automobile output. Recent history has demonstrated the resourcefulness of the industry in obtaining whatever raw materials are available.

Washington Steps In—If any further evidence was needed that direction of the automobile industry is moving from Detroit to Washington it was available in the government's request last week to the nation's automakers to "suspend" car price increases already announced or contemplated.

Each of the automobile producers has been asked to hold back on contemplated price increases until further government action on price and wage controls can be taken. Previously, GM had an-

nounced increases averaging about 5 pct on its passenger cars. Simultaneously, Ford which has been holding back its price increase, announced advances ranging from \$87.50 on Fords to \$165 on Lincolns.

Request Turned Down—Telegrams to the automobile industry from Allen Valentine, economic stabilization chief, requesting suspension of previously announced price increases have been rejected by General Motors and Ford.

The automobile industry is meeting this week with government officials in Washington to discuss future policies of the industry—including what to do about prices. In the opinion of practically everyone here, wage and price stabilization is now only a question of setting up the proper controls.

K-F Loan Has Strings—Kaiser-Frazer got its loan from Reconstruction Finance Corp. but not without strings attached. The original request was for a \$38 million loan but this was reduced to \$25 million by RFC. This loan is in addition to the \$44,500,000 loan previously granted to K-F.

In granting the loan, RFC held out for the following conditions: (1) No price increases without written consent from RFC, (2) reduce production to 600 units per day by the end of December, (3) K-F must make "conscientious efforts" to obtain defense work which will be given priority over the production of automobiles. The loan can be used to finance defense production.

The K-F loan was requested to finance warehousing of cars which K-F dealers are unable to purchase. With its hands tied tight on auto production, it's a good guess K-F will order full speed ahead in its efforts to convert to war production.

Higher Material Costs—In announcing GM's price increase, C. E. Wilson indicated that prices of commodities used in car production have jumped from 7 to 300 pct. These increases are as follows: aluminum 11.8 pct; nickel 20

pct; copper 32.4 pct; lead 41.7 pct; tin 66.9 pct; zinc 68.5 pct; wool 72.4 pct; and rubber 300 pct. Prior to recent price advances, the cost of steel had advanced 7 pct. GM wages have increased 11.1 pct during 1950, Wilson said.

M. E. Coyle Retires—The retirement of Marvin E. Coyle, executive vice-president and director of General Motors Corp., came without notice to outsiders. Mr. Coyle has been associated with GM since 1911. An accountant, he headed Chevrolet with distinction. Appointed a vice-president of General Motors and a director, he was advanced to executive vice-president in 1946. His prodigious memory earned him the undisputed title, "Mr. Facts and Figures."

In his meetings with the press, Coyle quoted statistics from memory at a rate that left reporters dizzy. His ability to marshal facts was best exemplified by a statement he made before the Senate sub-committee on profits in Washington, Dec. 20, 1948. This is still regarded as the most masterful

presentation of automobile industry policy ever assembled.

Louis C. Goad will succeed Mr. Coyle as executive vice-president in charge of the car and truck group, body and assembly divisions. John F. Gordon, formerly head of Cadillac, succeeds Mr. Goad as group executive in charge of Fisher Body, Ternstedt and Buick-Oldsmobile-Pontiac assembly divisions. Gordon also becomes a member of the administration and operations policy committee.

Promotions Come Fast—This is Gordon's second promotion within 6 months. Last July, he was named vice-president in charge of the corporation's engineering staff. Charles A. Chayne succeeds Gordon as head of the GM engineering staff. Chayne has been chief engineer of Buick since 1936.

Other year-end GM promotions include Harry J. Klingler of Pontiac as group head of passenger car and truck divisions; S. E. Skinner of Oldsmobile as group head in charge of Accessory Div.

THE BULL OF THE WOODS

By J. R. Williams



1,841,000 TONS WITH ONE "NATIONAL" CARBON LINING! *...and still going strong!*



● Carbon is the ideal material for lining blast furnaces. One example proving this statement is the record of one of the largest blast furnaces in this country, in which a "National" carbon block lining was installed several years ago. This furnace has produced approximately 1,841,000 tons of iron as of September 1, 1950 and is still going strong with the original lining.

The terms "National" and "Eveready" are registered trade-marks of

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UNION CARBIDE AND CARBON CORPORATION
30 East 42nd Street, New York 17, N. Y.**

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco
Foreign Department: U. S. A.

MORE THAN DOUBLE THE USABLE LIGHT!

The biggest news since the invention of flashlights—the brand new, leak-proof "Eveready" No. 1050 flashlight battery—gives more than double the usable brilliant white light for critical uses than any other flashlight battery we have ever made.

**NO METAL CAN
TO LEAK OR CORRODE**



WEST COAST PROGRESS REPORT

Digest of Far West Industrial Activity—By R. T. REINHARDT



Biggest Geneva Month—Finished steel production of the Geneva Steel Co. for November exceeded the best previous month by more than 15,000 tons. November total was 112,759 tons and the old record was May 1950 with 97,649 tons. November shipments totalled 113,540 tons, exceeding the previous high last August by more than 17,000 tons.

Lots More Chryslers—Chrysler caused elation in Southern California with an announcement by Manager C. C. Rowles that the automotive assembly division in Los Angeles will be trebled in production capacity with the addition of 880,000 sq ft. The new unit will be in operation sometime in 1951 and will add some 1200 employees to the payroll.

Present Chrysler production is 400 cars per day. It is estimated automotive assembly plants in the Los Angeles area purchase well over \$100 million worth of component parts annually from metal fabricators and casting and stamping producers.

Seattle Scrap-Short—Formerly the softest and most over-supplied market for scrap metal in the nation, the Pacific Northwest expects to be scrap hungry by late winter or early spring. Inquiries and orders for February and March deliveries are 50 pct above normal requirements, according to the

Seattle trade and there is every prospect of increased demand and pressure.

Shortage of Workers—All those statistics on increased Pacific Coast population and mass migration to the Far West seem belied by a scramble for manpower in heavy industry and an increasing shortage. California's Dept. of Industrial Relations reports an all-time high of 3 1/3 million wage and salary workers in non-agricultural establishments for October and only 143,000 unemployed, less than half of the same month a year ago.

Screw Machine Census—A survey of automatic screw machine facilities in the Portland area was recently completed by the Industries Dept. of the Portland Chamber of Commerce.

In 16 plants there are a total of 57 single spindle screw machines ranging in capacity from 3/8-in. to 4-in. with the greatest frequency in 1/2, 3/4 and 1 1/4-in. capacities.

In addition there are three 4-spindle machines, one 6-spindle and one 8-spindle in the 1 1/2-in. capacity. Several of these shops have been operating on a 3-shift basis since World War II.

Garrett to Phoenix—Garrett Corp. of Los Angeles announces a new 60,000 sq ft plant on 33 acres at Phoenix, Ariz., to be operated as AiResearch Mfg. Co. to manufac-

ture air turbine refrigerators and cabin pressure controls, requiring tolerances so fine that a completely air-conditioned plant in a new labor market inland is preferable. The expansion involves \$1 1/2 million and will immediately add 300 personnel to the company's 2600 staff.

Add Forging Billets—Forging quality carbon steel billets have been added to its production by Bethlehem Pacific at Seattle, South San Francisco and Los Angeles. Another recent addition was Bethlehem's "Mayari R" low-alloy, high-strength corrosion-resisting steel.

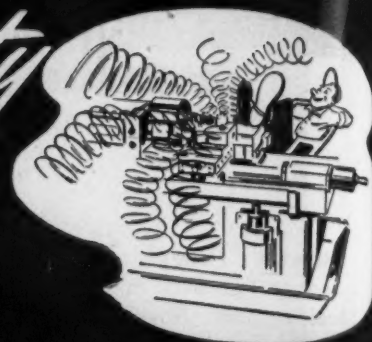
Expansionist Undaunted—When Henry Kaiser conceived his first shipyard 10 years ago at Richmond, eyebrows raised at the earthmover who dared a new element. But skeptics have become converts so far as Henry Kaiser is concerned.

Therefore, when last week from Washington Henry Kaiser proposed a \$200 million expansion program which "he hoped to boost to \$500 million in the near future" newspapers at Portland and in the San Francisco area spread the news. The \$25 million tinplate mill at Fontana is reasonably sure to come, but the reopening of the shipyards at Vancouver and Richmond may be less likely. As was pointed out in these columns last week, shipbuilding on the Pacific Coast is costly except for large quantity assembling.

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Better Machinability



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DESEGATIZED BRAND*
 HIGH SPEED STEELS
 HI CARBON - HI CHROME DIE STEELS

Fewer Heat Treat Losses

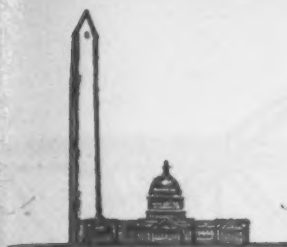


**LATROBE ELECTRIC
 STEEL COMPANY**

LATROBE, PENNSYLVANIA

Branch Offices and Warehouses
 located in principal cities.

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THE FEDERAL VIEW

THIS WEEK IN WASHINGTON



By EUGENE J. HARDY

CMP Sooner—A Controlled Materials Plan by second quarter 1951, rather than the original schedule of second half 1951 is now in the cards. This is the story as relayed to the Steel Producers Advisory Committee by officials of the National Production Authority.

NPA officials, including Dave Carson, Director of the Iron and Steel Div., do not foresee any orders cutting back steel usage across-the-board, as in the case of aluminum, copper, nickel, etc. Cut-backs in the use of these other materials will take care of demands for civilian steel before CMP takes over. There will be end-use limitations on steel, however, probably very soon. Also on the books is a series of orders specifying end-uses of alloy steels.

New Allocations — Meanwhile, the steel producers were told of several new allocation programs that will be announced soon. These cover locomotives, Canadian freight car production (8000 tons monthly), a program for Canadian warehouses paralleling the domestic warehouse order, and a February landing mat program. A major program for the petroleum industry is also under active consideration.

This industry estimates 1951 steel needs at 11.9 million tons. NPA is now attempting to get these requirements into realistic form, for as presented by the industry they include everything made of steel bought by the industry, regardless of source. Addition of these programs to the 10 pct military needs for steel and other programs still to come will hasten CMP.

Forms to File—NPA also told the steel producers that they will be required to file two monthly

forms, now in preparation. The first forms will cover January 1951 data. These are: (1) A shipment report by product and program, also showing past due orders. (2) orders accepted under "DO" priorities, directives and all allocation programs.

There is no program contemplated for the steel industry's own expansion program. Instead it will be worked out by the industry.

Plate Conversion and IAC's—Another must will require conversion of some sheet and strip capacity to plate to meet increasing plate requirements. If necessary, government directives will be issued, although it is believed the industry can meet this situation satisfactorily.

Individual product advisory committees are being established to cover the following items: Plates, bars, stainless, tubing, alloy and rolled armor. Eventually, there will be committees covering all major products, but it is still NPA policy to set up these committees only as they are needed.

Metals Price Executive—On the price control front Sam Ewing, Youngstown Steel & Alloy Co., last Wednesday moved into the Economic Stabilization Agency as consultant on ferrous and non-ferrous metals pricing. A former OPA metals official, Mr. Ewing is the first appointment to the agency from the metals industry. His major task probably will be to set

up divisions covering iron and steel and other metals.

Civilian Requirements—Civilian economy needs during mobilization will be looked after by an office within the NPA bearing the exact name of its WPB predecessor—the Office of Civilian Requirements. At present, the OCR exists only in skeleton form, its nucleus being the Marketing and Distribution Div. of the Office of Industry and Commerce.

OCR will determine requirements and act as claimant agency for civilian goods and services; act as claimant for all civil government; present requirements for materials needed for consumer goods and services; and review proposed orders and the administration of existing orders to assure that full consideration is given to civilian needs.

Centralize Controls—Don't be surprised if the Senate Preparedness Subcommittee (the 1950 version of the Truman Committee) soon calls for centralization of emergency control activities now scattered in about a dozen groups within four Cabinet departments and three independent agencies. Centralization of such activities would not only make it easier for the businessman but should also minimize the World War II civilian vs. military battle.

Meanwhile, the subcommittee expects to issue reports on steel, nickel and tin before the end of this month.



*Progressive
Steel Making for the
Industrial Midwest*

"Take a good look at the SYKES...

she's really two ships in one!"

"I'm Clyde Johnson, Second Mate on the S. S. Wilfred Sykes, newest ship in the Inland Fleet. If you live near the Lakes, you may have seen her. In that case you'll know what I mean when I say the Sykes is two ships in one. She's big—678 feet long, with a capacity of 20,000 tons of ore. And she's fast—makes a round trip between Superior and Indiana Harbor in five days. That's why she can haul 880,000 tons of iron ore in one season . . . actually the work of two ordinary lake freighters."

The addition of the S. S. Wilfred Sykes to Inland's iron ore fleet is just one more step in a continuous modernization and expansion program. This constant improvement of every phase of steelmaking facilities is further evidence that Midwest steel users can put their confidence in Inland as a progressive and dependable source of steel in peace and war.

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Milwaukee • New York • St. Louis • St. Paul



Products: Sheets, Strips, Tin Mill Products, Bars, Plates, Structural Shapes, Sheet Piling, Reinforcing Bars, Pig Iron, Rails and Track Accessories.

New Process

Slashes Cost of Phosphoric Acid Pickling



By **C. F. PAULSON**,
Research Chemical Engineer
and
M. E. GILWOOD,
Manager of Chemical Research,
The Permutit Co.,
New York



Cost of phosphoric acid pickling can be cut 66 pct by new process which reclaims the acid for reuse. In many cases, cost will be below that of the less desirable pickling with sulfuric acid.

MOST steel undergoes pickling at one time or another before it becomes part of a finished product. Pickling is done on some steel in the mills where it is produced. In the plants of steel users, pickling is common as a surface preparation, especially prior to applying a phosphate coating to the steel. While some alloy steels are frequently pickled with muriatic acid, nitric acid, or mixtures of acids, the common grades of steel are usually pickled with a 6 to 10 pct sulfuric acid solution.

Actually, pickling with phosphoric acid is preferable to sulfuric acid pickling. The number of dipping and rinse tanks is less than in a sulfuric acid pickling system, where rinsing must be more complete. This means lower investment and less floor space occupied. Phosphoric acid is not so corrosive as sulfuric acid under normal conditions of use, so that less expensive construction is possible and less maintenance is required. There are no obnoxious or corrosive strong acid

fumes which are objectionable to operating personnel.

In addition, it has been known for many years that steel treated with dilute phosphoric acid or a phosphate solution acquires an adherent phosphate coating which is rust resistant and forms an excellent base for paint. Some phosphate coatings on machined parts that are to receive wear, or on metal, which is to be drawn or extruded, provide a surface which absorbs oil and reduces friction.

A phosphoric acid pickling treatment generally utilizes a solution of 15 to 50 pct phosphoric acid in water. Frequently the process also includes chromates, solvents or detergents to assist in removing mill scale, grease and oil. The phosphoric acid first dissolves the rust and mill scale and then forms a coating of iron phosphate on the surface. The various commercial phosphate coating processes in use today utilize a solution with a lower free acid content, which is

capable of producing a much heavier phosphate coating. With these solutions, prior pickling with sulfuric acid is usually required.

In phosphoric acid pickling, base metal is not so strongly attacked as is the case with sulfuric acid. This is the reason for the reduced rinsing requirement when phosphoric acid pickling is used. It also means that control of the pickling is much simpler, because over-treatment does not result in as high loss of metal as in the case with sulfuric acid. And, the disposal of the waste pickling solution is simplified since it contains less dissolved base metal.

Despite these advantages, phosphoric acid pickling has not been used extensively because the acid itself is so much more expensive than sulfuric acid. Now a process which makes phosphoric acid pickling competitive, costwise, with sulfuric acid pickling has been proven successful. The new process depends on continuous purification and reclaiming of the phosphoric acid pickling solution.

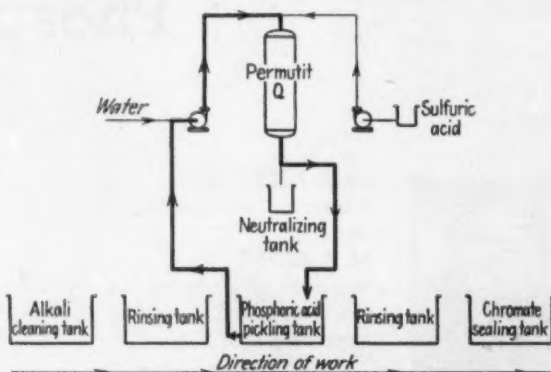
During the pickling operation, phosphoric acid reacts with rust and mill scale to form iron phosphate. In the reclaiming process, the acid is pumped directly from the pickling tank through a cation exchange unit of special design containing a hydrogen zeolite cation exchange resin. This resin has the property of releasing hydrogen ions and binding, in exchange, iron ions from the acid solution. The resin thus absorbs the dissolved iron from solution and simultaneously converts the iron phosphate in the pickling solution back to phosphoric acid.

When the exchange medium becomes exhausted and no longer removes iron, the flow of pickling solution is stopped and the solution remaining in the shell and piping is rinsed to the pickling tank with water. This results in a small amount

of dilution of the phosphoric acid which serves to make up for water evaporation and dragout losses. The losses of phosphoric acid itself from the solution are negligible.

The unit is then backwashed and regenerated with sulfuric acid. The chemical reactions which take place give hydrogen ions back to the zeolite, restoring it to its original condition, and pick up the iron ions to form iron sulfates. This solution is then discarded as waste. After proper rinsing, the unit is once again ready to treat the phosphoric pickling acid.

In operation, the reclaiming process is used to maintain the metal content of the bath at the optimum point, rather than to remove all of the



FLWSHEET of typical phosphoric acid pickling system. Note how equipment for acid reclamation can be superimposed on an existing pickling installation.

iron. The most satisfactory surface coating is produced when there is a substantial quantity of iron dissolved in the solution. However, if the iron content is too high the pickling operation becomes too slow.

An iron content of 2 pct expressed as ferrous iron in a 40 pct phosphoric acid solution appears to be most suitable for cold rolled steel. Therefore only a portion of the total pickling bath is passed through the hydrogen zeolite unit and most of the iron from this portion is removed. This treated portion is returned to the pickling bath to mix with the remainder of the pickling solution, lowering the overall iron content. The only phosphoric acid consumed is that which actually forms the rustproof coating.

The accompanying diagram shows how the phosphoric acid reclaiming process may be superimposed on existing facilities for phosphoric acid pickling. Installation of the process necessitates no other changes in the existing conventional pickling installation. The unit can be designed to operate either manually or automatically.

The reclaiming process was originally developed to reduce the operating cost of existing phosphoric acid pickling installations. But the operating economies are so marked that the process is of interest wherever stamped, machined or otherwise processed iron and steel are

Method of Treatment	Sulfuric Acid Pickling	Sulfuric Acid Pickling Phosphate Coating	Ordinary Phosphoric Acid Pickling	Permutit Phosphoric Acid Pickling
Iron dissolved by acid 4¢ per lb*				
Sulfuric acid	0.0080	0.0080	0.0080	0.0080
Phosphoric acid	0.0190	0.0190	0.0190	0.0033
Metals added to H ₂ PO ₄		0.0110	0.4310	0.0727
Water	0.0080	0.0080	0.0080	0.0070
Definite time to neutralize acid	0.0101	0.0101	0.0423	0.0010
Labor and overhead	0.1310	0.2020	0.1310	0.1030
Amortization of neutralization and special equipment	0.0012	0.0030	0.0012	0.0120
	0.2323	0.2404	0.6125	0.2170

* Except in rare cases, this is a saving only when the pickling product is sold by the pound.

now being pickled with sulfuric acid before further fabrication.

The accompanying table gives cost information for typical pickling of cold rolled 13 gage sheet, in cents per square foot of finished metal. These figures were prepared for sheet which is processed by the fabricator. Since the finished product is sold by weight, obviously the fact that less metal is dissolved in the pickling treatment means a direct cost saving. These cost figures are also representative of pickling operations in a metal fabricating plant, except that in most cases there would be no direct saving in steel costs attributable to the fact that less metal is dissolved in pickling. However, there is a saving in the disposal costs of wastes since they will contain less iron.

This installation has been operating successfully since the early part of this year. At first the work treated was chiefly cold rolled steel which had been stamped and formed. A portion of this steel is also welded into subassemblies. However, the current steel shortage has led to the use of a great amount of hot rolled steel and rusty metal. This has tripled the phosphate conversion load of the Permutit unit.

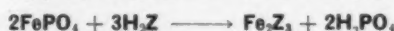
The increased use of off-grade steel has made it necessary to lower the iron content in the pickling bath from 2 pct to 1 pct in order to clean surfaces in the allotted time. The unit has satisfactorily produced this lower iron content in the bath. The phosphoric acid solution used is Prep-Pik-L, supplied by the Neilson Chemical Co. Phosphoric acid pickling was chosen, among other reasons, because it gave a

HOW IT WORKS

Pickling Operation



Acid Reclaiming



Exchange Resin Regeneration



*Z in these equations is not the symbol of a chemical element, but represents the zeolite resin.

surface, after painting, superior to other commonly used phosphate coating methods.

During a recent month, approximately 3600 lb of iron was dissolved in the phosphoric acid in this installation. Without regeneration, this amount of iron would be enough to necessitate the replacement of the complete bath three times each month at a total monthly cost of \$30,000. Contrasting with this, the cost of the regenerant sulfuric acid used during a month is less than \$450.

INSTALLATION of phosphoric acid pickling and reclaiming facilities, treating 500 tons of steel per day. Exchange resin is in tall tower at left. Short center unit is an acid-regenerated water softener. Tank at right contains strong sulfuric acid for regeneration.



Are You Getting the Most Out of Your



By JOHN E. HYLER
John E. Hyler and Associates,
Peoria, Ill.

The drill press is such a simple, common tool that it doesn't always get the attention more complex tools do. There are many attachments and modifications, some of which you may have overlooked, that can increase the versatility of your drill presses.

THE drill press is one of the most widely used of all machine tools. Most metalworking shops, no matter how small, have at least one. But, often simply because it is so familiar, the drill press does not receive the inventive attention of shop personnel that more complex machines do. This is especially true in small shops. When full use is made of the many attachments and modifications available, the drill press can be an exceptionally versatile tool. It is worthwhile for the shop foreman or superintendent occasionally to review the various types of

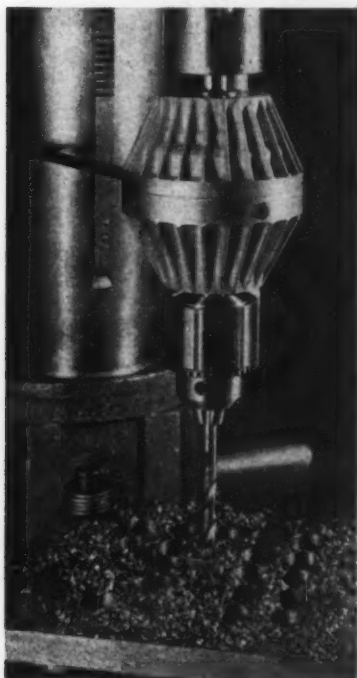
drill press equipment available, to make sure he is not missing something that would help him make fuller use of his drill presses.

Versatile Drill Chucks Available

Important advances have been made in standard drill chucks, the use of keyless chucks often speeding drill changes. Special drill chucks and tool holders are in use which supplement standard drill chucks to high advantage in many places. There is the quick-change drill chucks, in which a drill may be changed in a second with the spindle revolving. It being unnecessary to stop the machine, and there being no keys, collets or wrenches needed to make a drill change, time is saved and tools last longer. Such chucks have great value production-wise at drill presses where tool changes take place continually.

One remarkable development is a special device which imparts a slight reciprocating action to the drill at each revolution. Known as a drill chip breaker, it is located directly above the drill chuck. The value of the slight reciprocating action is particularly great in cases where deep holes are being drilled. In most conventional drilling, drill flutes are so nearly clogged by the continuous chip that it is difficult for coolant to reach down to the cutting edges. Where a drill chip breaker is employed, the slight lifting and falling action on the drill at each revolution terminates the chips and immediately starts new ones.

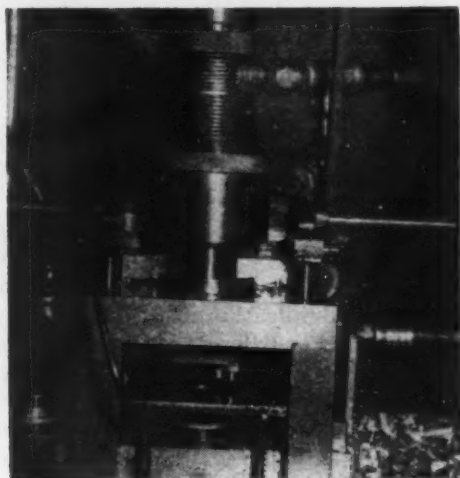
Thus the chips are made substantially uniform in size. Instead of whipping about on the drill above the work, they may be readily washed away by an adequate flow of coolant. And, each time the drill lifts slightly in the manner described, it allows coolant to go directly to the



THE MECHANISM ABOVE THE CHUCK on this drill press imparts a slight vertical reciprocation of the drill. This breaks up the chips and aids flow of coolant.

Drill Presses?

Part I



A SPECIAL FORM cutter on this recessing tool is used for a necking operation on a small radio clutch gear. Plant-built clamping fixture is operated by an air cylinder.

bottom of the hole and to the cutting edges of the drill. On deep drilling of conventional type, one must withdraw the drill from the hole a number of times to clear the drill flutes of chips and to adequately lubricate the drill point. Using a drill chip breaker, holes are often drilled as deep as 29 diameters of the drill at a single pass.

Special Drills Often Useful

Special cases often arise in which regular or standard drills should be laid aside in favor of special-purpose drills. Cases are on record where small holes drilled quite deep in very hard stock would permit drilling only a half-dozen holes or so between drill grinds. Often, substitution of drills more particularly designed for such work greatly stepped up the number of holes obtainable between grinds. Leading drill manufacturers often manufacture several special-purpose drills, and such possibilities should always be explored where out-of-the-ordinary drilling on a production job is at hand.

An interesting proposition to men who have a moderate amount of scrolling and design work to perform in light-gage metals is a special type of drill which makes its own starting hole for any interior design, after which the upper part of the tool may be used for working out the design. This drill press tool is made of high-speed steel.

Subland Tools Do Multiple Jobs

It is often desirable to use a combined drill and countersink, so holes may be drilled and countersunk in the same operation. Step drills are increasing in use for drilling holes having two or more diameters. With them the different diameters can be drilled with perfect concentricity, in one pass. Certain grinders are in use by means of which step drills may be made from standard drills. The cutting edges of the step drills may also be properly maintained on the same grinding machine.

Subland drills differ from ordinary step drills in that they do not have their different diameters on the same land, but have two separate lands running almost the full length of the flutes. Due to resharpening advantages, the subland drill often has a much longer working life.

Subland tools are obtainable which combine other operations with drilling. Some subland tools drill and ream at one pass. Others drill and counterbore. Some are made to core drill and ream. Recently, some subland tools have been made that drill and tap at one pass. The drilling portion of the tool in this case is necessarily smaller than the tapping portion, but has a diameter slightly greater than root diameter. Subland tools of spe-



DEBURRING HOLES in an aircraft forging on a drill press. Manipulating the knurled sleeve, as shown, retracts the deburring tool into its shank for insertion into the hole.

cial types are used in predrilled holes. One has been observed which reams, counterbores and forms a radius, all in one operation.

Carbide tipped drills, as well as solid carbide drills, are available from various leading drill manufacturers, and are finding extended drill press use. So-called hardsteel drills are very extensively used in drilling very hard materials. Use of these drills requires special drilling technique for good results. Operators using hardsteel drills must remember they differ completely from twist drills, and follow the instruction of the manufacturer touching their use. Long-length, straight-shank high-speed drills are readily available, and used in specialized applications. Oil-feeding drills are chiefly used for drilling deep horizontal holes where gravity does not assist coolant to reach the drill point, but there are some cases in which they may well be used in a drill press.

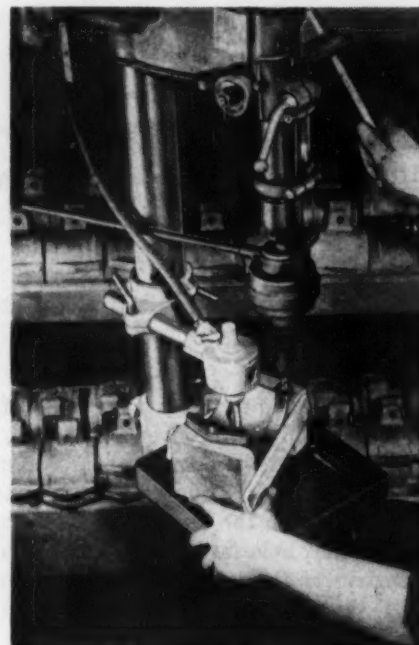
One interesting proposition is use of form drills. Special form drills can be and have been made on order for drilling holes having irregular contours longitudinally. Examples are flat-bottomed holes, holes incorporating one or more radii, or holes incorporating one or more tapers in their length. Some firms have furnished such drills on special order, working directly from a submitted part print.

Tools Other Than Drills Are Available

Tools other than drills are often applied to drill presses with advantage. The adjustable hole cutter is an example. Some of these tools, incorporating an extended pilot to run into a preliminarily drilled hole, make finished cuts in boiler plate, pipe, plastics, hard fiber, stainless steels and other materials. The cutters are made adjustable so that a hole of any desired size may be cut. One line of such tools contains seven different models, covering an aggregate diameter range for holes from $\frac{5}{8}$ to 5 in. They have a thickness penetrating capacity ranging from the cutting of thin sheets to material an inch thick.

It quite often becomes important to stub a drill, to obtain maximum rigidity and reduce stress on the tool to a minimum. Yet such cases do not arise often enough in the small shop to justify carrying a wide assortment of stub drills. The solution generally lies in use of a good collet chuck which is either so designed that it will receive and efficiently grip on fluted portions of broken drills, or so it will receive a considerable part of the length of a drill in the collet shank. One collet chuck has a contracting member which is merely slitted through down one side. Thus it has a continuous wrap-around action which enables it to hold and grip securely on the fluted portion of broken drills. It is particularly good for use where one wishes to utilize broken drill portions as stub drills.

Where a collet chuck is to receive a considerable portion of the length of a drill, thereby allowing stubbing of the tool, it is necessary that the shank of the tool be hollow-bored. One make of collet chuck has its shank axially bored through the major portion of its length. This bore is tapped and fitted with a simple headless setscrew. The



THIS AIR-POWERED CLAMP is readily adjustable on the drill press column. The clamp permits rapid change of the wooden fixture to three different tapping positions and holds firmly in each position.

setscrew is so arranged that it can be adjusted to any selected position within the internally threaded shank. Thus, it forms a stop for the drill so the tool cannot drive back, and allows stubbing any drill to any desired degree.

Recessing tools are often applied to the drill press with profit, and may be modified in such a manner as to perform necking operations also when desired. A tool of this kind is usually built for a given job. They have been provided and used in holes as small as $\frac{5}{16}$ in. diam. They often incorporate a ball bearing stop collar, which either strikes against the work or against a provided stop bushing. This limits the forward or downward movement of the leading part of the tool, while the following portion continues downward to drive and to laterally feed one or more tool bits which do the actual recessing or necking.

Deburring Is Done With The Drill Press

Rotary files have been used in the drill press chuck for different duties. One instance is use of a rotary clearance file for putting an accurate clearance break on punches. Rotary files have also been employed in the drill press for some kinds of deburring. There are also other ways of using the drill press as a deburring unit. Steel wool is made

up in ribbon form and wrapped around a spindle which can be held in the drill press chuck, the ribbon-form steel wool and the auxiliary spindle for this purpose being provided by a steel wool manufacturer. The steel wool ribbon is about 4 in. wide, and gets into irregular openings. As the pad becomes worn through long use, additional ribbon is wound in place. Winding is done in a direction opposite to that of rotation.



THIS LIGHT DRILL PRESS is equipped with a special dial feed for the workpieces, and an air feed for the dual spindle head.

One special tool applicable to the drill press has been developed especially for deburring the edges of holes which have been drilled, reamed, or bored in plastics or metal. It consists of an extended shaft which pilots in the hole being deburred, and of a cutting blade seated in and revolving with the shaft. The shaft is also provided with a knurled sleeve that may be slid back manually. This action retracts the cutting blade to a position inside the shaft for passing the tool through a hole when necessary. When the sleeve

is released, the cutting blade emerges to cutting position for removal of the burr.

An interesting arrangement which aids in deburring and certain other operations is use of an angle adaptor on light drill presses having a tubular column to support the drilling head and the motor. Using this angle adaptor, the entire drill head with its motor may be removed from the tubular column and remounted in such manner as to hold a tool with its axis at any desired angle and at any desired height. This greatly increases the versatility of a light drill press. Different drill presses of this general type are available but angular adaptors may be obtained for most standard types now in use.

Clamps Aid Productivity

The right kind of a clamp or vise often adds greatly to productivity of a drill press. There are clamps fitted with a handwheel-nut, operating a compound leverage through a drawscrew and clevis, by means of which one may obtain 8000 psi equalized, and many other types of mechanical clamps are available.

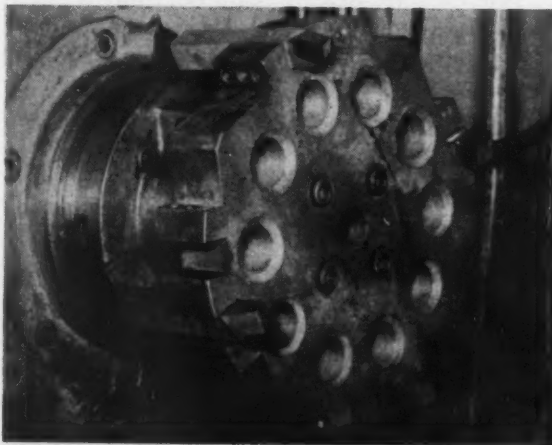
In many instances, especially on lighter drilling operations, use of compressed air clamps is found highly advantageous. The clamping element in such units is actuated by an air cylinder and piston. Such clamps are often made with a split-sleeve fitting which holds them to the column of drill presses of tubular column design. However, air clamps sometimes are mounted on special table fixtures where tables are tee-slotted. Foot control of such clamps is popular because it leaves both hands free to manipulate work.

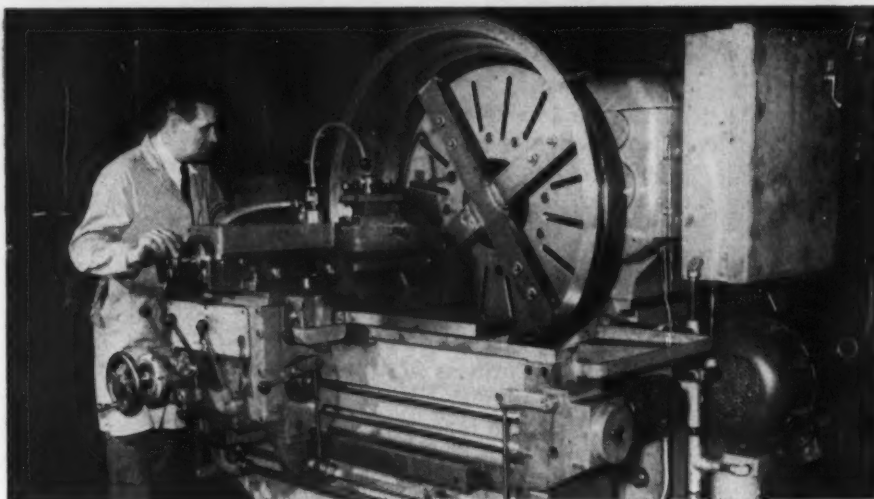
Many clamping problems are often simplified by use of a combination drill press table and clamp. This is really a two-part circular drill table. It has a screw clamp by means of which the two table parts may be spread apart to receive a workpiece, then clamped together upon it. By use of this device, shaft or bar-type work may be readily drilled in the end, if it is not so long that its lower end interferes at the floor.

Lathe Tools Used in Milling Cutter

TWO-PASS milling of a turbine part with a conventional 14-blade cutter has been cut to one pass by use of a simple step fly-cutter at the Fitchburg, Mass., plant of General Electric. On this operation, use of a fly-cutter, which mounts four standard carbide 1-in. shank carbide lathe tools in an old fly-cutting head, has also cut tool grinding and resetting costs.

Used in a Sellers horizontal mill, the step cutter removes $\frac{1}{2}$ in. of material, the tools being set so that the cut is broken up into four $\frac{1}{8}$ -in. steps. No operating difficulty has been experienced in taking the entire cut in one pass, whereas the former cutter frequently stalled while taking the cut in two passes. The fly-cutter also produces a good finish and the tools need sharpening only once every 8 hr.





New Lathe Has T-Shaped Bed

JET engine blade shrouds, which are large diameter stainless steel rings, presented a machining problem at Pratt & Whitney Aircraft Div., United Aircraft Corp. About 2 years ago, P&W began investigations on more efficient methods for handling this work, some of which was done on vertical boring mills. The more common practice was to use raised- or gap-bed engine lathes.

Workpiece diameters required a large heavy-duty type of lathe. However, the shrouds are short, thin-walled rings and the cuts to be made are relatively light and precise. For this reason, the long bed and high horsepower of a lathe large enough to handle the shroud diameters are not actually needed. Pratt & Whitney took up this question with Lodge & Shipley Co., Cincinnati. Together, they have developed a right-angle chucking lathe, especially designed for short, large diameter thin-walled work.

Bed Is T-Shaped

The new lathe has a T-shaped bed; that is, the section of the bed carrying the carriage is at right angles to the center line of the lathe. The carriage carries a cross slide which can move in a direction parallel to the lathe center line or at any angle to it. Thus, the machine can handle facing and straight or taper turning, or boring.

The machines made to date for Pratt & Whitney use a standard lathe headstock, a 25-in. heavy-duty type with an 11½-in. hole. This permits chucking of work pieces having a shaft or other extension, or work can simply be clamped to the faceplate. All other types of headstocks used with ordinary lathes can be furnished.

Current models of this new machine have a 37-in. faceplate and a maximum swing over the bed of 60 in. The travel of the facing carriage is 31 in. in one direction and 6 in. in the other. The travel of the compound rest is 12 in. forward and 4 in. back. The compound rest has a swivel range of 90°. Maximum depth of the work piece that can be handled is 12 in. from the faceplate.

The machine has 24 spindle speeds, ranging from 4 to 225 rpm. A maximum of 15 hp is delivered at 225 rpm. The carriage and compound rest have 55 speeds between 0.001 and 0.064 ipr, and the carriage can be rapid-traversed at 10 fpm.

Since the lathe was designed primarily for precise work on short, thin-walled sections of relatively large diameter and light weight, it embodies special characteristics for this class of work. Controls are sensitive and easy to operate. All operating functions are controlled from the apron. Since there is no long bed extending beyond the work piece, the work is extremely accessible for loading and unloading, measurements, and following the operation of the tool. The lathe was designed for use with carbide tools.

A distinct advantage of the T-bed lathe is the reduced floor space requirement. It occupies about half the space needed for a standard lathe having a 60-in. swing. Other features of the machine include independent control of facing and turning speeds in either direction and rapid traverse in either direction by light pressure on the apron control levers. The apron has a direct reading dial and counter for diameters, and a direct reading dial for lengths. The carriage has pads on each side for use with gage blocks. The spindle has a Warner electric brake and an electric jog button for use when changing spindle speeds.

Costs Less Than Straight Bed Lathe

It is expected that the new lathe will find extensive application as a general purpose lathe; it might well become the standard machine for thin-wall, short-length work of varying diameters. Contributing to this is the fact that the new lathe is less expensive than conventional straight-line lathes capable of handling equivalent diameters. It is also more accurate and faster in operation. The machine is less cumbersome, and loads and unloads with greater ease. It also offers more sensitive control and greater accessibility of controls to the operator.

Anneal Ductile Iron

For Better Machinability



By **J. F. KAHLES**, Associate Professor of Metallurgy, and **R. GOLDHOFF**, Graduate Student, University of Cincinnati, Cincinnati.

Adequate machinability and physical properties can be obtained in ductile iron without complete pearlite decomposition. Increased silicon content speeds carbide solution, while pearlite decomposition is mainly a function of manganese content. Small amounts of carbide can be tolerated if the matrix is basically ferrite.

ANNEALING characteristics of ductile irons are important in a commercial sense both to the manufacturer and user of ductile iron castings. For many years, vast emphasis has been placed upon high strength in cast irons. This approach has often led to the application of high strength irons where a lower strength iron with markedly improved machinability would be much more economical.

To correlate the influence of annealing on the physical properties and machinability, two basic types of ductile irons were considered:

(1) The carbidic irons, which are ductile irons of the usual chemistry. When this analysis is cast in thin sections such as found in thin plates and pipe fittings, the microstructure shows appreciable quantities of free iron carbide.

(2) The regular ductile irons having spheroidal carbon in a matrix of pearlite and ferrite. In the as-cast structures, the percentage of pearlite is greater than that of ferrite. Consequently, they are often referred to as pearlitic, in contrast with the carbidic irons.

The chemical analyses of materials used in this investigation are listed in Table I. Specimens 1A, 1B, 1C, 1D, and 1E are carbidic irons having the same base chemistry. A variation in ferro-silicon inoculation was used to provide data on the effect of varying silicon content. Specimens from No. 2 were taken from the thin section in a step bar.

Pearlitic specimens were obtained from three sources: No. 3 from the 1-in. section of a step bar; No. 4 from 30-in. lengths of 3-in. rounds; and No. 5 from a 6-in. square section. Originally, all of the above materials were in the as-cast condition. It might be well to note that with heavy sections and in long lengths, there are variations in the percentages of structures.

The procedures used were dictated to some extent by current practices in ductile iron annealing. Briefly, most cycles now used involve a temperature of 1650° or 1700°F for about ½ hr followed by cooling to 1275°F and holding for about 5 hr.

Carbide Solution Times Vary

All of the carbidic iron specimens showed similar carbide decomposition characteristics. Carbide decomposition implies solution of the iron carbide in austenite and any attending graphitization. Fig. 1 shows the typical rate of carbide decomposition at temperatures of 1600°, 1700°, and 1800°F. Virtually complete decomposition is a matter of less than 1 hr, particularly at the higher temperatures. Complete carbide solution was reported¹ to vary from 1½ to 7 hr, depending on the temperature and the chemical composition of the iron in question. Table II shows the effect of silicon content on the rate of carbide decomposition.

Variables besides the silicon content are present. The iron compositions involved are

fairly comparable, however, and the data are considered representative of at least a trend in the effect of silicon content on subsequent carbide decomposition. The resulting lower times of solution with increased silicon content follow typical white iron decomposition characteristics. Other compositional effects can probably be inferred from typical malleable and white iron behavior.

Appreciable amounts of carbide (even as low as 3 pct) in the microstructure are known to drastically decrease tool life in pearlitic gray irons. This occurs because such structure is imbedded in a relatively hard pearlite matrix. In steel, the spheroidization basically provides a soft ferritic matrix for the carbide, increasing machinability. Residual amounts of carbide might then be tolerated in ductile irons with a basically ferritic matrix. The difference in cost between annealing times for complete carbide solution and decreased tool life from residual carbide might favor the latter.

Pearlite may be decomposed in one of two ways. First, specimens may be cooled from above the critical slowly through the critical temperature range, then held at a constant subcritical temperature for a definite length of

TABLE I

CHEMICAL ANALYSIS

	Si	S	Mn	P	Ni	Mg	T.C.
(1) Carbide Iron							
1A.....	3.12	0.017	0.52	0.136	0.78	0.082	3.59
1B.....	3.27	0.02	0.45	0.084	0.70	0.066	3.34
1C.....	3.28	0.02	0.45	0.084	0.70	0.066	3.39
1D.....	3.75	0.02	0.45	0.084	0.70	0.066	3.31
1E.....	3.96	0.02	0.43	0.084	0.70	0.066	3.35
(2) Carbide Iron							
2.....	2.98	0.019	0.61	0.06	1.37	0.060	3.42
(3) Pearlite-Ferrite (Ductile Iron)	2.98	0.019	0.61	0.06	1.37	0.060	3.42
(4) Pearlite-Ferrite (Ductile Iron 3 in. Round)	2.33	0.010	0.40	0.052	1.55	0.076	3.58
(5) Pearlite-Ferrite (Ductile Iron 6 in. Square)	2.46	0.009	0.43	0.098	1.91	0.085	3.52

TABLE II

SILICON vs CARBIDE DECOMPOSITION

Silicon, Pct	Time for 95 pct Fe 3C Decomposition	
	1700 °F (min)	1800 °F (min)
2.98	38	32
3.12	40	32
3.27	32	32
3.28	32	32
3.75	16	13
3.96	20	17

TABLE III

CHEMISTRY vs PEARLITE DECOMPOSITION

Ductile Irons	Composition, Pct				Time to Reach 15 pct Pearlite, hr
	C	Si	Eff. Mn	P	
(3) Pearlite-Ferrite, step bar.....	3.42	2.98	0.55	0.08	8
(4) Pearlite-Ferrite, 3 in. round.....	3.52	2.46	0.40	0.052	4
(5) Pearlite-Ferrite, 6 in. square.....	3.58	2.33	0.37	0.096	2.8

TABLE IV

AVERAGE PHYSICAL PROPERTIES

Amount of Pearlite, Pct	Tensile Strength, 1000 Psi	Yield Strength, 1000 Psi	Elong., Pct	R.A., Pct	Hardness, Bhn
65	103	...	6.5	3.5	230
50	80	60	16.0	12.0	200
20	75	55	19.0	15.5	180
3	77	62	20.0	22.0	160

TABLE V

PEARLITE vs TOOL LIFE

Structure, Pct Pearlite	Anneal Time at 1275 °F, hr	Bhn	Relative Cutting Speed, Fpm, for	
			40 min Tool Life	200 cu in Tool Life
65 (as cast)....	...	230	325	320
50.....	.75	200	405	420
20.....	1.5	180	520	565
3.....	5.0	160	550	600

time. Fig. 2 shows the rate of pearlite decomposition where the specimen has been held at 1750° for ½ hr, furnace cooled to 1275°F and held. An alternate procedure involves simply eliminating the austenitizing treatment and therefore heating to subcritical temperatures only. Fig. 3 shows this decomposition for the same chemical analysis used in Fig. 2.

In both cases, a rather rapid rate of pearlite decomposition was followed by much longer indicated times for the elimination of small amounts. All of the pearlitic irons noted in Table I showed comparable decomposition trends. Microstructures seemed equivalent except for the form of pearlite involved. The specimens decomposed on subcritical holding show more pearlite spheroidization when examined at magnifications on the order of 1000X. This leads to questioning the necessity of solution heat treatment in the austenite field, where small amounts of carbide cannot be decomposed anyway. The answer might lie in the determina-

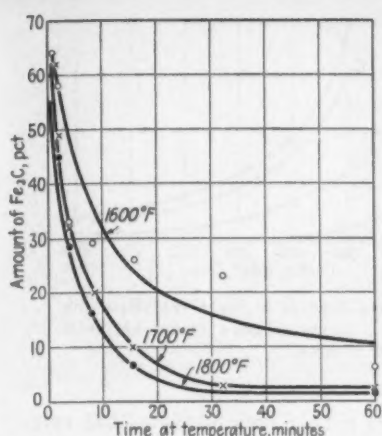


FIG. 1—Typical decomposition of iron carbide in a carbide iron at various temperatures. Chemistry of the iron was 3.27 Si, 0.02 S, 0.45 Mn, 0.084 P, 0.70 Ni, 0.066 Mg, and 3.34 T.C.

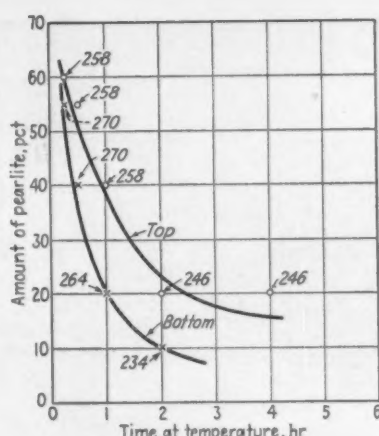


FIG. 2—Graph showing decomposition of pearlite in the pearlitic type of ductile iron, austenitized at 1750°F for 30 min and decomposed on continuous cooling to and holding at 1275°F. Chemical composition was 2.33 Si, 0.01 S, 0.40 Mn, 0.052 P, 1.55 Ni, 0.076 Mg, and 3.58 T.C. Hardness (Bhn) is shown at the points.

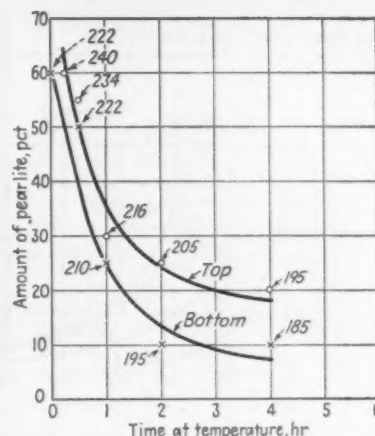


FIG. 3—Pearlite decomposition in a pearlitic ductile iron held at a subcritical temperature of 1275°F. Iron composition is the same as in Fig. 2, and Bhn is shown at the various points on the curve.

tion of physical properties obtained for each type of treatment.

Compositional effects have already been estimated by Rehder.^{1,2} Information obtained here substantiates his findings, even though the data are not extensive. Apparently the Mn-S ratios or effective manganese contents in ductile irons are determining factors in rates of pearlite decomposition. Reference is made to Table III. Virtually all of the manganese is effective as an alloying element because ductile iron is practically sulfur-free. The implications of this fact are far reaching because of the enormous savings of manganese that may be achieved—a very vital factor in our metal economy.

As with other gray irons, there was a persistence of pearlite in areas where steadite was present. The amount of steadite present for these irons was small, as one might expect from the phosphorus present in these irons.

Machining data were not taken on all of the irons, but were directed primarily to the machining of material analysis No. 4. This ductile iron was vertically cast in 30-in. lengths, 3-in. rounds, which were convenient for the evaluation of machinability. Twenty-three bars were cast. Some of them were subsequently annealed at 1650°F, followed by a 1275°F treatment to give the various combinations of pearlite and ferrite shown in Fig. 4. Table IV lists physical properties for the No. 4 analysis, obtained from keel blocks accompanying the casting and annealing practice.

Turning tests were made on an infinite-variable-speed lathe under the following conditions: Feed, 0.011 ipr; depth of cut, 0.100 in., with a carbide tipped tool (Kennametal K6). No back rake was set on the tool, and side rake was at a 6° angle; the end cutting edge angle was 6°, as were the side and end relief angles;

there was no side cutting edge angle.

The relation between tool life and cutting speed for the various annealed structures is shown in Figs. 5 and 6. In Fig. 5, the tool life in minutes required to produce 0.030 in. wear land on the flank of the carbide is plotted against cutting speed. In Fig. 6, the same data are replotted with tool life given in terms of cubic inches of metal removed instead of time.

Considerable improvement in tool life was ob-

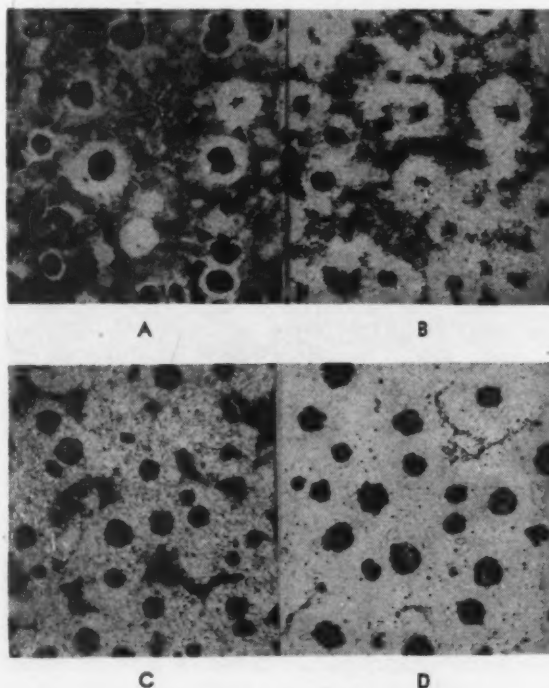


FIG. 4—As-cast structure (A) containing about 65 pct pearlite; other micros show structures annealed at 1650°F for 1/2 hr and held at 1275°F for (B) 1/4 hr, (C) 1 1/2 hr, and (D) 5 hr. Sample B contains about 50 pct pearlite, C is about 20 pct pearlite and D has about 3 pct pearlite. Nital etch, 100X.

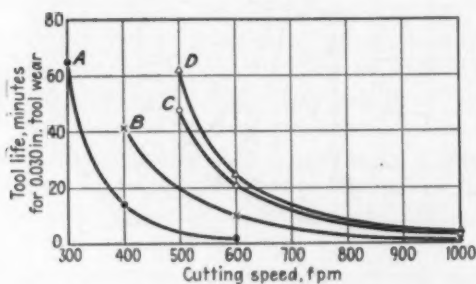


FIG. 5—Curves showing the effect of microstructure on tool life at varying cutting speeds, with tool life plotted against cutting speed. Sample A is as-cast, B is the 50 pct pearlite structure, C has 20 pct pearlite and D is 3 pct pearlite. Physical properties are those listed in Table IV, chemistry is No. 4 in Table I.

tained by annealing so as to transform the structure from 65 pct pearlite to 20 pct pearlite. Only a small further improvement in tool life was obtained by continuing the annealing to provide 3 pct pearlite, as shown in Table V. It thus appears that the economical structure for machining in this particular case would be the 20 pct pearlite, which was held at 1275° for only 1½ hr.

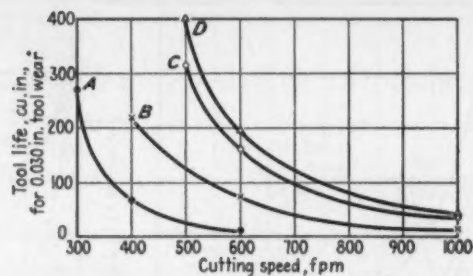


FIG. 6—The same data as in Fig. 5 replotted with tool life given in terms of cubic inches of metal removed instead of time.

Table IV shows rather conclusively that relatively high ductility is obtained before pearlite is completely removed. This work, along with other experience, indicates that in ductile irons one can rely to a great extent upon microstructure in predicting machinability. This correlation has been shown in other cast irons by Field and Stansbury.³

References

- ¹ J. E. Rehder, "An Introduction to the Annealing of Nodular Iron," AFS Reprint No. 50-17, 1950.
- ² J. E. Rehder, "Effect of Mn-S Ratio on the Rate of Anneal of Black Heart Malleable," AFS Trans., vol. 58, 1948, p. 138.
- ³ M. Field and E. Stansbury, "Effect of Microstructure on Machinability of Cast Irons," ASME Trans., August 1947, p. 665.
- ⁴ U. S. Air Force Machinability Report, Curtiss-Wright Corp., 1950.

New Blowpipe Drills Dynamite Holes Faster

A BLOWPIPE that drills blast holes in hard, abrasive rocks and ores by burning a mixture of oxygen and either kerosene or fuel oil at 3000 to 4000°F has been introduced by The Linde Air Products Company, New York. According to this manufacturer, these burning gases are directed against the rock with supersonic velocity, and the resulting speed of pierc-



THE LINDE BLOWPIPE drills 1½-in. blast holes in rock and hard, abrasive ores to depths of 5 ft or more. Fuel is burned within a combustion chamber in the head, and burning gases are directed against the rock through a nozzle with an expanding taper. Cooling water enters through the hose inlet and passes around the combustion chamber, leaving through the water-spray cap and turning to steam.

ing is much greater than that of older drilling methods. The new blowpipe drills 1½-in. holes from any angle 5 ft deep in sandstone and feldspathic quartzite at a rate of 50 ft to 60 ft per hr and in granite at 22 ft to 25 ft per hr. Longer blowpipes are available on special order for piercing holes to depths of 7 ft to 9 ft or more.

The Linde blowpipe does not usually melt rock, but, instead, the intense heat it produces causes a continuous, localized thermal expansion. A rapid spalling or fragmenting of the material in the developing hole occurs. The steam, which is automatically generated from the blowpipe cooling water, together with combustion gases, flushes spallings from the hole.

The Linde FSJ-1, as this manual blowpipe is designated, has a sliding shield to protect the operator from exhausted steam and spallings. A hole-sizing shell is used to assure proper hole diameter. The blowpipe is 7 ft in length and weighs 17 lb, 7 oz. It is easily operated by one man, while holding it in his hands.

Oxygen requirements for the blowpipe are approximately 520 cu ft per hr at a blowpipe pressure of 150 lb per sq in. Fuel consumption is 28 lb, or about 4 gal per hr, at the same blowpipe pressure. Fifty gallons of cooling water is used per hr, at 50 psi.



PATCHES, COMPLETE GLOVE sections and other renovating materials are matched as closely as possible to each glove's original material of construction. Adhesives, resewing and stapling are used to affix patches to worn areas.

Industrial Glove Salvaging Cuts Replacements

By WALTER G. PATTON.

Detroit Editor,
THE IRON AGE

Both large and small plants in the Detroit area are having gloves cleaned and repaired—sometimes as often as eight times. Renovation tends to reinforce gloves so that they wear better.

DEVELOPMENT of special techniques for renovating worn and torn cloth and leather gloves has enabled the U. S. Industrial Glove Corp., Detroit, to offer a unique cleaning and repair service to a growing number of plants in the metalworking and other industrial fields. Large automotive plants, steel mills, foundries, steel fabricators, appliance manufacturers, office machine producers, glass plants, petroleum refineries, plating and metal finishing shops have also found the service attractive. It assures them a minimum outlay for new gloves, seven-day cleaning and repair, low flat rates regardless of volume of work and prompt pick-up and delivery by the salvaging company.

Experience has shown that firms which may not have attempted to salvage gloves before, or whose attempts have proved unsuccessful, are now reclaiming more than 80 pct of the gloves turned in by their workers. In recent months, still other factors have stimulated interest in the salvage plan. These are the increases in the price of new gloves and the growing threat of cotton and leather shortages. In addition to all kinds of gloves the company is extending its repair and renovation service to include any and all types of industrial protective apparel.

Both large and small plants have reported several examples of substantial savings since adopting this salvage plan. Over a period of

months, a large automobile manufacturer has saved \$279,162 in the cost of gloves that would otherwise have been bought and used in 29 plants engaged in a wide variety of assembly and fabricating operations. More than a million gloves of all types were processed for this manufacturer during the period studied. Percentage of gloves salvaged was 83.9 pct. Complete results of the cost study are given in the accompanying table.

Another customer is now using renovated gloves on a line handling hot auto wheel rims. No reconditioning was previously attempted. Repaired gloves in this plant permit, on an average, eight wearings. Original cost of the gloves used is \$1.15 each, or \$2.20 a pair.

A typical example in the field of small manufacturing is that of a lock manufacturer whose glove requirements were excessive, even though he employed less than 300 people. Several unsuccessful attempts had been made through the conventional industrial laundering methods. However, most of the gloves were found to be useless because of shrinkage, wrinkles and holes found in them after cleaning. A recent test revealed a salvage of 92 pct at a saving of 48 pct on the replacement cost.

Successful salvage work such as these examples demonstrate results largely from the



CLOTH AND LEATHER gloves, typical of those received from metalworking and other industrial plants by U. S. Industrial Glove Corp. for cleaning and repairing.

special emphasis placed on restoring materials to their original efficiency. A variety of materials and repairing techniques, patterned after those used in the original manufacturing, are employed. Reconditioned items will withstand cutting oils, solvents, heat and water.

Salvaging operations begins when gloves are picked up on a regular basis at plants within a 300-mile radius of Detroit. Containers are provided at no extra cost or those selected by the customer may be used. All transportation costs are included in the service charge.

Gloves are first cleaned in the laundry. Ap-

ANALYSIS OF SALVAGE—"X" CORPORATION

Name	LEATHER GOODS						CLOTH GOODS					
	1 Cleaned Only	2 Cleaned & Repaired	3 Scrap	4 Total	5 Pct Salvage	6 Pct Scrap	7 Cleaned Only	8 Cleaned & Repaired	9 Scrap	10 Total	11 Pct Salvage	12 Pct Scrap
Plant A.....	8,068	463	2,854	11,385	0.75	0.25	15,041	538	3,228	18,807	0.83	0.17
Plant B.....	48,634	45,150	63,747	157,531	0.60	0.40	57,295	62,179	39,873	159,347	0.75	0.25
Plant C.....	1,706	2,710	1,771	6,187	0.72	0.28	656	320	654	1,630	0.60	0.40
Plant D.....	43	32,458	975	33,476	0.97	0.03						
Plant E.....	701	480	122	1,303	0.91	0.09						
Plant F.....	94,942	54,776	3,601	153,319	0.98	0.02						
Plant G.....	5,971	1,942	124	8,037	0.98	0.02	2,516	663	57	3,236	0.98	0.02
Plant H.....	10	74	12	96	0.88	0.12						
Plant I.....	3,965	3,216	312	7,493	0.96	0.04						
Plant J.....	318	85	60	463	0.88	0.12	9	110	3	122	0.98	0.02
Plant K.....	6,886	9,144	1,510	17,520	0.92	0.08	119,946	7,290	2,729	129,965	0.98	0.02
Plant L.....	34,712	29,070	11,118	74,900	0.86	0.14	25,755	20,276	9,879	55,910	0.83	0.17
Plant M.....	228	56	96	380	0.75	0.25	1,720	72	141	1,933	0.93	0.07
Plant N.....	513	63	11	587	0.99	0.01	158	47	205	205	0.100	
Plant O.....							3,909	5,121	2,662	11,692	0.78	0.22
Plant P.....	71,369	65,507	518	137,394	0.97	0.03	11,970	838	109	12,917	0.99	0.01
Plant Q.....	173	1,765	1,387	3,325	0.59	0.41						
Plant R.....	10,675	3,725	2,720	17,120	0.85	0.15	34,593	11,085	6,203	51,881	0.88	0.12
Plant S.....	11,252	3,594	2,061	16,907	0.88	0.12	8,019	3,433	1,465	12,917	0.89	0.11
Plant T.....	176	90	197	463	0.58	0.42	8	11	13	32	0.59	0.41
Plant U.....	731	517	2,825	4,073	0.31	0.69	3,017	1,817	7,429	12,263	0.40	0.60
Plant V.....	2,457	2,709	652	5,818	0.89	0.11	4,441	5,380	1,733	11,563	0.85	0.15
Plant W.....	13,503	25,735	18,556	57,794	0.68	0.32	4,681	58	188	4,927	0.96	0.04
Plant X.....		1,418	495	1,913	0.75	0.25		1,934	583	2,517	0.77	0.23
Plant Y.....	5,724	5,404	4,064	15,192	0.74	0.26						
Plant Z.....	836	2,249	480	3,535	0.88	0.12						
Plant AA.....	302	179	27	508	0.95	0.05	830	104	16	950	0.98	0.02
Plant BB.....	38	55		93	1.00							
Plant CC.....	30	68	02	100	0.98	0.02		72	28	100	0.72	0.28
	323,943	292,702	120,267	736,912	0.837	0.163	294,564	121,357	76,993	492,914	0.844	0.156

RECAPITULATION	
Total Gloves Salvaged.....	1,032,566 Gloves
Total Gloves Scrapped.....	197,260
Pct of Salvage.....	83.9
Pct of Scrap.....	16.1

As indicated in this analysis of the year-long salvaging service performed by U. S. Industrial Glove Corp. for one of the large automobile manufacturers, the percentage of gloves salvaged was 83.9 pct, representing a saving of \$279,162 in the cost of gloves that would otherwise have had to be bought and used.



THE SAME GLOVES after they have been washed, patched, resewn, restapled and otherwise renovated. They are brought back to their original contours and freed of wrinkles and creases by a reshaping process performed on steam-heated forms.

proved sanitizers are added for disinfecting purposes. After cleaning, gloves are tumbled and dried at high temperatures. Segregation in processing is always practiced so that all of each individual customer's work is kept together during the entire cleaning and repair operation.

After cleaning, the gloves are sorted into three groups: gloves requiring no repair work, gloves to be repaired and gloves to be scrapped.

Where the glove has been severely damaged, it may be necessary to reface it with a patch covering the palm area and a large portion of the inside finger area. Repairs readily withstand subsequent cleaning, as well as most conditions to which they are exposed in industrial use. Because repaired portions of gloves are

also reinforced areas, it has been found in many cases that a reconditioned glove will outlast a new glove.

The next step in the renovating process is reshaping the glove on a steamheated form which counteracts slight degrees of shrinkage and eliminates wrinkles and creases. Finally, reconditioned gloves are classified as to type and color, matched into pairs and packaged five to a bundle to provide convenient handling, storage and control for the customer.

Large quantities of heavy weight gloves, mitts and hand pads are handled. In most cases, these items are completely "torn down" and reassembled with new material. The reassembly is a repetition of the original manufacturing and a reconditioned hand pad is hardly distinguishable from a new one.

Besides its reconditioning service, the salvaging company is frequently called upon to act in an advisory capacity, performing "post mortems" on gloves to determine the reasons for excessive wear or failure. In general, inferior materials or faulty construction will be more apparent after a glove has once been used than when it is brand new.

Extended experience has demonstrated that practically all of the types of gloves used today in industrial plants can be repaired. This includes cotton flannel, terry cloth, and similar materials. Leather gloves, including chrome leather and horsehide designed for hard service in steel mills, foundries and auto body shops, are being repaired regularly.

According to reports from several users, renovated leather gloves that have been restored to their original shapes may actually be preferred by some workmen to a pair of new leather gloves that require breaking in.

To Reduce Polishing Costs, Polish Flat

AUTOMATIC polishing of steel in the flat, followed by phosphate coating and lubrication to protect the surface during the forming operation, has marked economic advantages over polishing of formed articles. At least a part of the automobile industry has turned to this method for bumpers and other parts. The steps in this procedure, including the cleaning prior to phosphating, were discussed by H. J. McVey and V. M. Darsey in a paper presented at the recent American Electroplaters' Society meeting in Boston.

Flat polishing is far less expensive than polishing on contoured parts, even with fully automatic equipment. An example was cited showing that contour polishing on one part had cost 9¢ per sq ft and was being replaced by flat polishing at a cost of 0.6¢ per sq ft.

Equipment is available for flat polishing steel to 8-12 microinches finish, consisting of abrasive belts with or without lubricants. After polishing, the parts are cleaned and pre-conditioned for a phosphate coating by spraying or brushing, both of which are better than immersion. The resultant coating should not increase the roughness of finely polished steel, and might even have a leveling or reduced roughness effect.

After cleaning, the phosphate coating is applied in the type suitable for the subsequent finishing operation. It might be heavy, for resistance to wear, or lighter for undercoats or bases for paints. It might also serve as an aid in drawing, in which case a lubricant would have to be used. Soap base material in aqueous medium is a satisfactory drawing lubricant, easy to remove before plating.

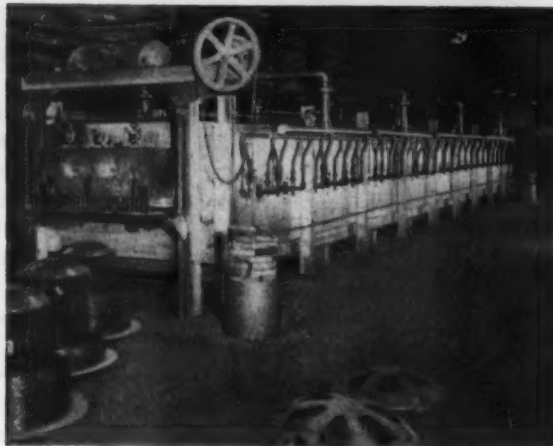


FIG. 1 — Charging end of one of the three new wire patenting furnaces at Macwhyte Co. The unit is free standing, which provides a ventilated hearth.

Patenting Furnace Features

Lightweight Construction

By W. R. Bloxdorf
Metallurgist,
and A. M. Naysmith
Plant Engineer,
Macwhyte Co.,
Kenosha, Wis.

Increased fuel economy and reduced operating costs are achieved by a new automatic wire and wire rod patenting furnace. Proper design, coupled with use of lightweight insulating firebrick, improves efficiency of the process, gives greater uniformity.

AS part of a program aimed toward modernization of heat treat facilities, three newly-designed wire patenting furnaces were installed at the wire mill of the Macwhyte Co., Kenosha, Wis. The new furnaces have been in successful operation on a continuous 24-hr basis for about a year, with regular shutdowns on Sundays and holidays. These furnaces are used in the patenting treatment on medium and high carbon steel round wire and wire rod, ranging from 3/32 to 9/32 in. in diam.

Patenting is a specialized form of heat treatment for obtaining structural characteristics necessary for subsequent cold drawing of such products as rope and spring wires and tire bead wire. The treatment is continuous, with single strands of the wire or rod pulled through the furnace at various speeds consistent with their size. Temperatures employed in patenting vary from around 1650° to 1850° F, depending upon steel composition and ultimate physical properties de-

sired in the finished cold drawn product. Most important, the furnace must maintain uniform temperature throughout the greatest possible length of the heating chamber.

A wide variety of sizes and compositions is encountered, and it often becomes necessary to change abruptly from one size and grade of steel to another. This may also require immediate changes in furnace conditions. For this reason, it is highly advantageous if the furnace temperature can be quickly raised or lowered to new levels with the shortest possible time lag.

The use of lightweight insulating firebrick in the construction of wire and rod patenting furnaces has proven to be entirely suitable. Through use of these materials, a great reduction in weight of equipment has been realized. This in turn lowers appreciably the heat storage value required for any one temperature in a given furnace.

The new furnaces (Fig. 1) and the ones which

they replaced are identical in only two respects. The heating chambers of both are of the open-fired type and of the same overall hearth length and width, namely, 50 ft and 4 ft respectively. They differ widely in such features as general construction, combustion system, mode of temperature control, and capacity.

The old furnaces were built upon a solid foundation consisting of concrete, red brick, and sand. The arch, walls, and hearth sections representing the hot faces were of ordinary firebrick construction having a thickness of approx. 9 in. Surrounding these sections was a 9-in. thick solid layer of brick of relatively low insulating value. All of this brickwork was encased in the conventional manner by a steel plate shell.

In the construction of the new furnaces, lightweight insulating firebrick was used throughout. In addition, the solid foundation in direct contact with the earth was eliminated. The hot faces of the new furnaces represented by the arch, walls, and hearth are constructed with Babcock & Wilcox K-23 insulating firebrick. This structure has a nominal thickness of 9 in., as shown in Fig. 2. Surrounding the 9-in. layer of K-23 is a 4½-in. thick layer of B & W insulating firebrick K-16. In addition, a 3½-in. layer of refractory castable, B & W Kaocast, is placed upon the hearth or furnace floor. Instead of a solid foundation, the furnace bottom rests upon a steel floor 18 in. from the ground, thereby providing a so-called ventilated hearth.

Furnaces Propane Fired

The combustion system of the old furnaces utilized manufactured gas having a heating value of 520 BTU per cu ft. This was supplied to the burners under a pressure of about 10 psi. In a burner installation such as this, the energy of the gas was used in providing the air needed for combustion. The new furnaces employ entirely a low pressure combustion system with low pressure propane gas as fuel. The air required for complete and satisfactory combustion is supplied at 1 psi pressure by a McKee centrifugal pressure blower to each of the furnace zones.

There are four distinct and separate temperature zones in the 50-ft furnaces. All employ McKee-Eclipse proportioning burners supplied by Eclipse Fuel Engineering Co., Rockford, Ill. The capacities of the burners were selected upon a consideration of the heating load of the furnace and of the desirability of maintaining a uniform temperature throughout the furnace length.

Control of temperature throughout the old 50-ft furnaces was manual. Assisting such control was a 3-point recording pyrometer employing chromel-alumel thermocouples at three points in the furnace. The new furnaces are operated under automatic temperature control entirely. Such control in each of the four zones is effected by a Wheelco Xactline Capacitrol.

The Wheelco Capacitrols serve to operate Barber-Colman motors which actuate variable port North American air valves, thereby supplying the air necessary for the fuel demand. A second thermocouple is used in each of the four zones for the purpose of temperature recording. Such recording is accomplished by a Leeds and Northrup Micromax continuous recorder.

Higher Production With Less Fuel

Insofar as steel heating capacity is concerned, the old furnaces were able to treat approx. 1000 lb per hr. While the new furnaces were designed to treat 2500 lb per hr, they have been found capable of satisfactorily treating from 2700 to 4000 lb per hr and are doing so regularly.

Very pronounced increase in fuel economy has also been effected. With the old furnaces, fuel consumption averaged around 1000 Btu per lb of steel treated at a rate of 1000 lb per hr at 1750°F. At the same temperature, the new furnaces satisfactorily treat 2500 to 3000 lb per hr with a fuel consumption of 600 Btu per lb. Overall fuel efficiencies of the old furnaces ranged from 20 to 27 pct. At a production rate equal to 105 pct of design capacity, the new furnaces show an overall fuel efficiency of 42 to 47 pct.

Flexibility in temperature control is desirable in a patenting furnace. The use of lightweight insulating firebrick in the construction of the present furnaces has enabled a true realization of this feature. For example, at a temperature of 1780°F with a heating load of 3000 lb per hr, it is possible to lower the furnace temperature 100°F and obtain temperature uniformity within a 5 to 10 min period of time. Temperatures can be raised an equivalent amount in the same period.

Another feature in favor of the use of insulating firebrick in wire and rod patenting furnaces is the relative ease with which the furnace can be brought to operating temperature. It required from 2 to 4 days to reach the desired temperature and attain temperature uniformity in the old furnaces. In the new furnaces, a temperature of 1750° to 1800°F can be reached in from 3½ to 4 hr, starting at about 200°F.

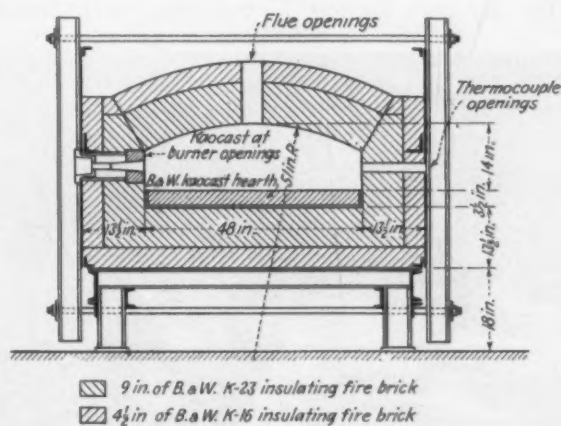


FIG. 2—End section through one of the 50-ft steel wire or rod patenting furnaces. Use of lightweight B & W insulating firebrick is shown.



SPECIAL DESIGN pay-off and tapered drum for easy removal of drawn coils are features of new Aetna-Standard horizontal bull block.

Pointing, Shearing Part of Continuous Cycle of New Bull Block

PPOINTING and shearing done continuously while the block is in motion contribute to high production in drawing copper tubing on a new horizontal bull block. Recently announced by the Aetna-Standard Engineering Co., Youngstown, the bull block eliminates the need for starting or stopping until a draw is complete, by including a push pointer and shear as an integral part of the unit.

The need for coil pushoff is eliminated in the new bull block by use of a tapered drum which enables the operator to unload the coil with ease when a draw is completed. Another feature is a special coil pay-off integral with the bull block. Drawing can be done from either straight tubing or coils.

The bull block's auxiliary equipment includes a lubricating unit for internal and external lubrication of tube. A conically-shaped lubricating insert, placed in the tube before drawing begins, is used to inject drawing lubricant inside the tube during operation.

After insertion of the floating plug into the tube, it is passed through the shear and gripped by the hydraulic push pointer. By push button

control, the pointer is operated to force the tube end through the die to the gripper jaws.

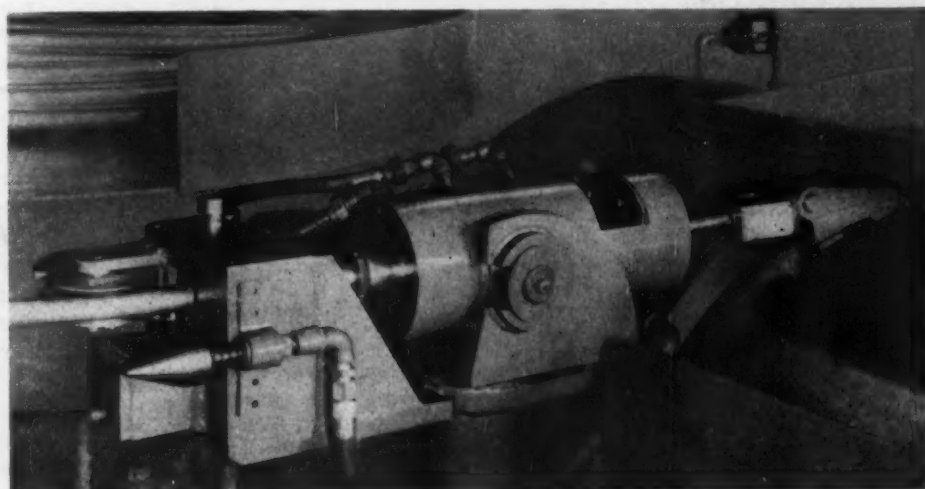
The crop shear, used to cut the trailing end of the tube near the end of the draw, operates while the draw is in progress. It is not necessary to stop the draw to shear off the end, as is the case with conventional equipment. Dynamic braking of the main drive motor stops the block smoothly and quickly when the end of the tube is pulled through the die, completing the draw.

Aetna-Standard's demonstration machine is rated at 20,000 lb pull, though other ratings will be available. Speed range is adjustable between 150 and 600 fpm. The main motor can operate on standard dc shop current, being rated at 100/125 hp, 230 v.

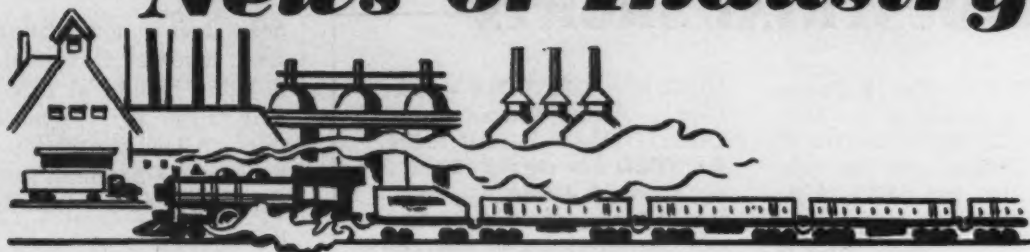
A typical drawing cycle produces tubing of $\frac{3}{8}$ in. OD with a 0.035-in. wall and from $1\frac{1}{8}$ -in. OD, 0.070-in. wall tubing in 5 passes. The maximum size tubing drawn to date on this unit had a $1\frac{1}{2}$ -in. OD and 0.090-in. wall.

The demonstration machine was fitted with a 48-in. diam drum having a 40-in. face. It can accommodate up to a 54-in. diam drum. The unit includes a hydraulically movable drum guard.

SHEAR and hydraulic push pointer are integral part of new bull block. Both can operate while drum is in motion, eliminating need for stopping or starting until drawing cycle is completed.



News of Industry



Crucible Signs Union Shop

Pittsburgh — Crucible Steel Co. of America has signed the first union shop contract with the United Steelworkers (CIO) in current negotiations. The agreement, covering 11,500 employees, also includes the standard 16¢-per-hour average increase accepted by other steel producers.

Crucible is not the first company in basic steel to agree to the union shop, however. When Kaiser Steel Co. signed its first contract with the USW, the union shop was part of the agreement.

Plan to Double Capacity

Chicago — Present production capacity of the Powdered Metal Products Corp. of America will be doubled when a new addition to its Belmont Ave. plant is completed. The plant addition, on which construction has been started, will house presses for piece part production and provide toolroom facilities for the production of the metal dies required in powdered metal fabrication.

SKF Grants Voluntary Wage Rise

Philadelphia—A voluntary pay rise averaging 5½¢ an hr for non-incentive workers and slightly more for incentive employees was granted by SKF Industries, Inc., to 2800 of its Philadelphia plant personnel. Under its contract with Local 2898, United Steelworkers, CIO, SKF was not required to open negotiations until August, 1951. SKF has hired 20 pct more workers in the past 6 months because of increased demand.

Materials Restrictions Hit Detroit

But auto makers fight to assure supplies . . . Procurement is an old problem to them . . . Steel seen toughest . . . but non-ferrous metals are causing worry, too—By Walter Patton.

Detroit—Even without the threat of a controlled materials plan the production outlook for the automobile industry remains uncertain. While it can be predicted that the auto industry will aggressively pursue all available materials and supplies, it is still uncertain whether the companies can keep their schedules up to 120,000 units per week after January.

There have already been substantial cuts in auto production. Under the terms of its new \$25 million loan, Kaiser-Frazer will reduce its schedules to 600 units per day. This compares with a peak of 1400 in October. Ford has reduced its output by 80,000 units. Reductions are set for January and February.

Independents Hit Hardest

Independent auto producers have been hardest hit. One manufacturer, for example, has reduced its auto output 25 pct. There has been no planned switch from appliances to refrigerators or vice versa by the industry, except where available materials have dictated such a change.

There appears to be some sharp difference of opinion within the industry as to government policy of cutting car schedules by reducing available raw materials rather than making a direct cut in auto production. Generally speaking, the independent car makers favor an across-the-board reduction. The

big three, however, with their greater resources and more effective bargaining power, naturally prefer the elbow room they have under the present method of indirect cutbacks.

Essential or Nonessential

Informed Detroit sources believe that eventually—and probably in the not too distant future—production throughout the U. S. will have to be broken down into essential vs. nonessential items. When that occurs, the auto industry will make a strong effort to get a large part of its present output earmarked as “essential transportation.”

At the moment, steel is definitely the tightest item on the material list. Aluminum will undoubtedly be a serious factor for every car maker by the end of the first quarter. However, following anticipated reductions in January and February schedules for lack of steel, the nonferrous reductions may not prove to be the controlling factor determining the amount of auto production. A serious consequence of the aluminum order is that unless modified it will hit some producers—Cadillac and Oldsmobile, for example—particularly hard. However, GM is believed to have taken some steps to parry this blow by switching aluminum from its refrigerator division to its car, truck and bus divisions.

A substantial quantity of Euro-

INDUSTRIAL SHORTS

ACQUISITION—The Kollsman Div. of the Square D Co., Elmhurst, N. Y., manufacturers of aircraft instruments, has been acquired by the STANDARD COIL PRODUCTS CO., INC., Chicago. The purchase price is believed to be around \$5 million. A subsidiary of Standard Coil will take over the Kollsman business with Victor E. Garbonara as president.

TEST FACILITIES—New laboratory test facilities have been completed by AEROL CO., INC., Burbank, Calif. The test equipment was designed to speed the resolution of design problems posed by widely-different wheel and caster requirements of industry.

TOOL ADVISER—Herbert L. Tigges, president of the American Society of Tool Engineers and executive vice-president of Baker Bros., Toledo, has been appointed adviser and consultant on machine tools to the NATIONAL PRODUCTION AUTHORITY in Washington.

MOVES PLANT—The Dallett Co. of Philadelphia, purchased in 1947 by the REED ROLLER BIT CO., has been moved to the Cleco Div. plant in Houston, where they will produce Dallett tools and accessories.

IN BUSINESS—Service for impregnated hi-pressure test castings is being done by the newly organized SEAL CAST CO., INC., at 1145 North Mill St., Reading, Pa.

GROUP LEADERS—Thomas H. Chilton, technical director of the development engineering division of E. I. du Pont de Nemours & Co., has been elected president of the AMERICAN INSTITUTE OF CHEMICAL ENGINEERS. William I. Burt, vice-president of the B. F. Goodrich Chemical Co., was named vice-president. Stephen L. Tyler and C. R. De Long were re-elected secretary and treasurer respectively.

DISTRICT OFFICERS—The Capitol District chapter of the INSTITUTE OF SCRAP IRON & STEEL has elected Leonard C. Klein of Joseph C. Klein, Inc., Albany, as president. The new vice-president is Herman Garbowitz of Samuel Garbowitz & Son, Schenectady.

SELLS BUILDING—Arrangements have been made by FOLANSBEE STEEL CORP. for the sale of its general office and warehouse building in Pittsburgh to the Urban Redevelopment Authority. Negotiations are under way for purchase of another building in Pittsburgh.

INCREASES CAPACITY—A warehouse building adjacent to its Pittsburgh warehouse plant has been acquired by FORT DUQUESNE STEEL CO. An additional coil slitting line will be installed within the next 60 days.

SOUTHERN PLANT—Work has begun on a new plant in Birmingham by GENERAL AMERICAN TRANSPORTATION CORP., Chicago, to do various types of fabricating. It is expected to be in operation during the third quarter of 1951.

EXPANDING—Expansion has been started on the oxygen producing plant of the LINDE AIR PRODUCTS CO. at East Chicago, Ind. This plant supplies oxygen principally to the steel and metalworking industry in a large portion of the Middle West.

SALES AGENT—Roots-Connersville Blower Corp., Connersville, Ind., has appointed the KOERNER ENGINEERING & SUPPLY CO., Portland, Ore., as exclusive sales agents for all R-C products in the states of Oregon and Washington.

ADDITION—Construction of a second \$250,000 addition to the plant of the ANNISTON FOUNDRY CO., Anniston, Ala., manufacturers of soil pipe, has begun.

pean steel is now coming into Detroit. Some of this steel, at least, is being bought at prices reasonably close to Pittsburgh quotations. All of the European sheet, however, is handmill steel and its application to deep drawn parts is not practical.

The continued eagerness of the industry to obtain more steel is illustrated by these facts: (1) An estimated 30 pct or more of the steel being used by the auto industry today is obtained by conversion, (2) a substantial percentage of this steel costs \$200 or more and the price is increasing constantly as scrap prices continue to soar.

Washington and Steel

This week General Motors made its second substantial investment in new capacity. GM has agreed to loan Jones and Laughlin \$28 million for an expansion of its Otis Works in Cleveland. GM will take 20,000 tons of steel per month from J & L as long as the company continues to operate full blast. GM had previously made a substantial investment in McLouth Steel Corp. in order to assure itself an adequate supply of steel.

It can be counted on that the auto industry will keep rolling full blast until production is cut back, either by orders out of Washington or a lack of parts or raw materials. The possibility that sharp reductions in nickel will force many changes in plating is already present. Threatened cutbacks in copper and tin are not being overlooked. However, the real immediate threats to auto output continue to be Washington and steel.

FTC Wins Campaign Against Corn Items Basing Point Pricing

Washington—The Federal Trade Commission last week announced final victory in its 3½-year campaign against basing-point pricing in the corn products industry.

The prohibition against the controversial pricing practices, which was recommended by an FTC trial

examiner on last Sept. 29, became the official decision of the commission when it was neither appealed, stayed, nor placed on the FTC's docket for review.

The final order prohibits nine manufacturers of corn derivatives and seven of their sales subsidiaries from entering into or co-

operating in any agreement to fix prices for their products. It forbids the use of basing-point and zone systems of pricing when they are the result of any planned common course of action, agreement, understanding, combination or conspiracy among the firms named.

Farm Equipment Makers See Steel Pinch

Formerly favored free market distribution . . . Faster defense spending changing their minds . . . Sentiment swinging toward protection by formal allocation system—By Gene Beaudet.

Chicago—Reverses in Korea and the President's recent request for an additional \$17.8 billion for defense purposes are causing a change of sentiment among farm equipment manufacturers. Prior to the Korean setback the Farm Equipment Institute presented a report to Commerce Secretary Sawyer and William Harrison, NPA administrator, stating that it favored free market distribution of materials to all manufacturers in the industry.

Informed observers state that the report was based on the expectation of a slow mobilization program taking several years to reach its peak. While it was hedged with the request that the industry be assured an adequate supply of material if military requirements reached a point where they would seriously affect the civilian economy, it did not ask to be put under a system of allocations to receive needed materials. It was one of the few basic industries willing to stick it out in a free market and take its chances.

Bigger Farm Program

Now, however, with mobilization in all likelihood to be greatly accelerated, the feeling is growing that an allocation program similar to those for freight cars, lake carriers and the warehouse industry, should be set up to insure farm equipment manufacturers of an

adequate supply of steel products.

Increased domestic crop requirements along with urgent foreign needs is expected by informed sources to result in a farm program for 1951 which will exceed that of 1950. In order that such a program can be carried out, farm implement production during the coming year must continue at least at the same rate as that of this past year.

Furthermore, as the defense program gains momentum, more and more workers will be leaving the farms for higher paying jobs

in industrial areas. Farm labor supply will also be affected by the expansion of the armed forces. This will result in a greater need for labor saving farm machinery.

According to figures compiled by the Institute, 2.76 million tons of steel will be needed during 1951 by farm implement makers and their suppliers to operate at the same level as this past year. This comes to around 230,000 tons a month. By way of comparison, current allocations to freight car builders provide a tonnage of about 310,000 tons a month for the first quarter of 1951, or about 80,000 tons a month more than that needed by farm equipment manufacturers and suppliers to maintain current rates of production. There is little doubt that farm implements are as vital to the national defense and economy as other industries already on an allocation basis.

Getting Less Steel

Without formal allocation, it doesn't seem likely that farm equipment manufacturers will receive the steel tonnages needed to maintain the 1950 level of production during the coming year. Like most other civilian consumers of steel they are suffering cutbacks due to demands of the allocation programs and rated DO orders.

Many companies were dropped out of January mill delivery schedules entirely. A number of smaller companies are reported faced with the possibility of shutdowns due to lack of steel. Others have been informed that they will receive further cutbacks in the second quarter of next year. With more government funds slated to go into defense supporting industries and DO ratings the amount of free steel will become smaller and smaller.

For these reasons those close to the situation are of the opinion that members of the farm equipment industry are revising their present sentiments concerning free distribution of materials and are becoming more desirous of the protection offered by an allocation program.



"Since you do mental work at the office all day, a little physical work will relax you."



MIGHTY MITE: Reportedly the world's most powerful, an electrically powered industrial tractor pulls two Diesel locomotives weighing half a million pounds. Only 10 ft long and tipping the scales at a mere 6 tons, the tractor was made by Automatic Transportation Co.

Wage-Price Control Orders Readied for Quick Application

Washington—Way was cleared last week for fast imposition of price-wage controls if sudden action on the part of the government became necessary.

Price Administrator DiSalle said that while orders are in preparation for necessary use, the government did not plan to impose any price-wage freezes in the immediate future.

He also warned that manufacturers should not boost prices in order to get set for a possible price freeze. If they do, he said, they should be prepared for a roll-back when and if price ceilings are proposed.

Dangers of Controls

The new price administrator's statements came on the heels of a 10,000-word report to the White House and Congress in which Attorney General McGrath warned the government to go easy in the matter of controls. Too many, he said, would tend to kill off a free and competitive economy.

The Justice Dept. head recommended that blanket controls should be avoided if possible and that any price controls should be limited to shortage areas if possible. He also recommended that the government should try to spread its defense contracts among as many manufacturers as possible to lighten the impact of defense orders on small business.

At the same time, he advised the

government to go slow in approving voluntary agreements between producers—on the grounds that these tended to encourage monopolies. Another recommendation was that the government should avoid as much as possible the employment of people on a dollar-a-year basis lest "special interests" receive undue preference.

Ireland's Sole Steelmaking Plant Now Plans Sheet Output

Cork, Ireland—Irish industry now has a steel backbone that is getting stiffer. The government-sponsored Irish Steel Holdings Ltd. steel works on the island of Haulbowline, in Cork harbor, the only steelmaker and roller in Ireland, has had a flying start during the current world-wide shortage of steel. It now plans expansion to produce steel sheets.

Trains Local Men

In the few years of its operation it has trained local men to become steelworkers and now "quality" is a company slogan. Its 35-ton open-hearth and rolling mills produce merchant bars to British Standard Specifications and output has been boosted to meet Ireland's full demand—while competing with foreign steel.

The plant uses 100 pct cold scrap charges, obtaining limestone, dolomite, fluorspar and coke from domestic sources. It has eliminated cogging and blooming mills by teeming small ingots for direct rolling into merchant bars.

National Steel to Put Largest Iron Ore Carrier on Great Lakes

Pittsburgh—National Steel Corp. will build the largest ore-carrying ship ever to ply the Great Lakes—capable of transporting 21,000 gross tons—to help meet increased iron ore requirements caused by the company's expansion of steel-making capacity.

The company said the ore carrier will be almost twice the average size of the American iron ore ships now operating on the Lakes. National has seven ore ships.

National Steel has increased its ingot capacity by 600,000 tons since the war ended, and has plans under way to add another 750,000 tons by early 1952, when its capacity will total 5,250,000 tons.

This expansion program includes a new 480,000 ton per year blast furnace at Great Lakes Steel Corp., additional pig iron facilities at Weirton Steel Co., and construction and enlargement of open-hearth furnaces at both plants.

Launching—Summer, '51

Construction of the big ship will begin in August, 1951, at the Lorain, Ohio, yard of the American Shipbuilding Co. Launching is scheduled for the summer of 1952. Overall length of the vessel will be 690 ft with a beam of 70 ft and a molded depth of 37 ft.

Displacement at a draft of 24 ft, the maximum now available in existing channels, will be 20,340 gross tons, including cargo, fuel and stores. Approximately 19,500 gross tons will be iron ore cargo. Should the available draft be increased to 25 ft 6 in. or more, the ship's cargo capacity would be increased to approximately 21,000 gross tons.

Two coal-fired water tube boilers equipped with spreader-type stokers and a geared steam turbine will generate more than 7000 horsepower. At maximum draft the ship's speed will be more than 16 mph. In an average season the ore carrier would make 46 round trips. About 7500 tons of steel will be required to build the boat.

Cobalt Cutback May Turn U.S. to Remote Fields of Brazil

Transport problems stall exploitation . . . Plans dropped after war.

Sao Paulo—The rich but remote cobalt fields of Brazil may be remembered once again by American makers of high-speed steels. Their memory has been nudged by the 70 pct cutback in the civilian consumption of cobalt. Talk of using these deposits developed during World War II but with war's end and availability of more easily transported Belgian Congo cobalt interest went flat.

That the U. S. was thinking of exploiting these fields in emergency is proven by the visit of Morris Llewellyn Cooke, who headed the World War II Technical Mission to this country. He said that the oxidized nickel-cobalt ore deposits at Sao Joao dos Tocantins, in mid-Brazil near the mouth of the Tocantins River, were "among the important known properties of this nature in the world."

Transportation Problems

This is the drawback: A 1000-mile tributary to the Amazon River, the Tocantins is an unruly stream, made unnavigable by sheer rapids. Ore boats cannot make the trip—and no railroad runs into the wild territory. While full exploitation must await another era, some pickings can be gotten to ease the cobalt shortage.

Mr. Cooke, in his book, "Brazil on the March," published in 1944, suggested mule hauling through the jungle and concentration or reduction of the ore at the mine. But mule transport cannot lead to worthwhile exploitation and reduction is difficult because firewood and charcoal fuels available at the site are inadequate.

The state of Minas Gerais has a nickel-cobalt mine—and it has a plant run by electric power. But, unluckily, the ore has a nickel content of a scant 4 to 5 pct. Mr. Cooke reported that 50,000 tons of cobalt ore was available without counting unestimated reserves. If



KING SIZE: That nodular iron castings are getting heavier is shown by this pump case and cover, cast at the Farrel-Birmingham foundry, Derby, Conn. Weight of the two castings is 8314 lb.

crisis presses, said Mr. Cooke, "possibly 20 tons a day" could be mined and flown out by planes.

Also in 1944, William T. Pecora, Dept. of Interior, reported that the size and richness of the ore fields warranted spending large sums to establish a local industry. The squeeze on cobalt is on and the U. S. may be forced into an expensive decision. Right now the ore is so remote that Brazil itself must export all of its cobalt.

Carnegie's South and Gary Works Set Record in November

Chicago—The South and Gary works of Carnegie-Illinois Steel Corp., U. S. Steel subsidiary, broke all production records during November despite unfavorable weather and a 30-day work month. Previous records were all set during 31-day work months.

South Works Leads

South Works led with a new record of 355,909 openhearth ingot tons produced during November compared to 354,246 ingot tons for October. Total steel products shipped in November was 319,531 tons, bettering a previous record of 318,847 tons, set in March, 1949.

No. 1 openhearth at Gary works broke a 24-year record with 124,263 ingot tons. The old record was set in March, 1926, with 123,705 tons. No. 5 openhearth produced 87,597 tons during November to top its December, 1949, high of 86,674 tons.

RFC Grants \$25 Million Loan To K-F—Complete with Strings

Asks car output cut . . . Hold price line . . . Go after defense orders

Washington—The Reconstruction Finance Corp. has agreed to lend the Kaiser-Frazer Corp. \$25 million for working capital and plant expansion. But the 11-month loan has as many strings as a maypole.

K-F had applied for a loan of \$38 million, RFC officials said. In granting the revamped request for \$25 million, RFC specified that the firm must cut output of autos to 600 units per day by Jan. 1.

Autos Are Security

In addition, the company may not increase its prices above the Dec. 1 level without the government's permission and must also make every effort to obtain war contracts and give those priority over automobile production.

The loan is to be secured by new Kaisers and Henry Js stored in bonded warehouses. RFC officials said about 13,000 Kaisers and about the same number of Henry Js would be security.

As the cars are withdrawn from storage, the entire wholesale price is to be paid to RFC. Of that sum, 90 pct will go toward repayment of the loan and 10 pct will go toward repayment of a \$10 million revolving loan previously granted.

The loan will be used in part to help finance an expansion program which will include a new

plant at San Francisco for "the manufacture of products in the military classified list," Henry J. Kaiser, president of the firm, stated. Kaiser said he also plans to reopen two West Coast shipyards and to expand aluminum, cement, steel and gypsum capacity.

The new loan is to be repaid by Nov. 7, 1951.

Carnegie Steel to Install New Ferromanganese Gas Cleaner

Pittsburgh — Carnegie-Illinois Steel Corp. will install a new ferromanganese gas-cleaning system at its Duquesne Works to eliminate dust discharged from the furnace stacks and recover important ferromanganese ore.

A 220-foot bleeder stack to regulate pressure of ferromanganese gas from the furnaces will be placed in operation soon. It will automatically control and burn ferromanganese gas not burned in the plant's boiler houses.

The gas-cleaning system, designed by U. S. Steel engineers, will be the first of its kind ever built. Smoke and dust will be removed from the ferromanganese gas. The facilities will occupy a half-acre of ground near the plant's blast furnaces.

Major \$228 Million Expansion Set by J & L

Will add 1.5 million tons to ingot capacity . . . Most goes to Pittsburgh works, balance to Otis, Cleveland . . . Program to be completed by Jan. 1952 . . . GM lends \$28 million.

Pittsburgh—Jones & Laughlin Steel Corp. will spend \$228 million in the next 2 years to complete its postwar expansion program. It will bring total expenditures since 1946 to \$375 million.

Enlarged and accelerated for defense reasons, the program will increase the company's ingot capacity by 1,550,000 tons to 6,400,000 tons by January, 1952. Finished steel capacity will go up in proportion—from 3,500,000 tons to 4,600,000 tons

Finish by Early '52

At the Pittsburgh works, where 11 openhearth furnaces are now being installed (original plans called for six) steelmaking capacity will increase by approximately 1,200,000 tons. This takes into consideration the 780,000 tons of obsolete openhearth, bessemer and duplex steelmaking capacity being replaced. Balance of the ingot capacity increase will be installed at the Otis works, Cleveland.

Approximately one-third of the new Pittsburgh works capacity

will be available by next August, the balance in January 1952. The Otis program is scheduled for completion by January 1952.

The company has received a certificate of necessity from the government permitting amortization of \$75 million of the proposed expenditures over the next 5 years, and plans to ask for similar accelerated depreciation to cover balance of the program.

Besides the new steelmaking capacity at Pittsburgh, J & L plans to install a new blooming mill to replace one of two present mills. A new bar mill will be installed to replace the last remaining pre-1930 mill, which is being dismantled to make room for scrap preparation and storage facilities. Three other obsolete bar mills already have been dismantled.

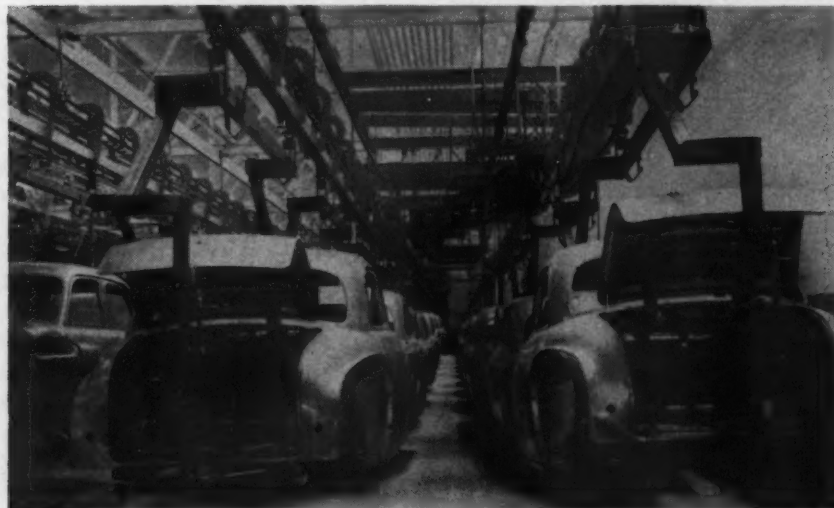
Two Openhearth for Otis

Addition of the new openhearth capacity here will aggravate an already tight scrap market in the Pittsburgh district.

At the Aliquippa plant, a second electrolytic tinning line with auxiliary equipment, a cleaning unit and a temper mill will be installed, as previously announced. This will enable the company to make full use of its cold-reducing capacity there. When this program is completed in mid-1951, tin mill capacity will be increased 50 pct. A modern high speed rod mill will replace two obsolete mills at Aliquippa. Capacity of the tube round mill will be increased about 58 pct, providing additional steel for the seamless pipe mills and making available round bars for shell or other forgings. A new battery of 59 byproduct coke ovens now being installed will be producing early next year.

At the Otis works, ingot capacity will be increased by about 360,000 tons per year with the ad-

CHASSIS LINEUP: DeSoto bodies move automatically on overhead conveyers to the entrance of the paint department. They have just been welded in the new body-building operation installed in DeSoto's Warren Ave. plant, Detroit. The conveyor attachment rotates the bodies for painting ease.



dition of two openhearth furnaces, making a total of 11 at the plant. Additional soaking pits, and replacement of a 650-ton blast furnace with a larger unit with a hearth diameter of about 26 ft will provide more hot metal. Equipment will also be installed for the handling of larger coils and finishing equipment will be improved and expanded.

GM Loans \$28 Million

The \$28 million to be spent at Otis will be loaned by General Motors Corp., to be repaid by Jan. 20, 1966 in monthly installments, size of which will depend on volume of sales to GM and others. Maximum monthly payment will be \$325,000. In return, GM will buy just about all the additional capacity at Otis, except for what may be diverted to others for defense purposes GM also will get 50,000 tons of finished steel per year from the Pittsburgh and Aliquippa plants to replace an equivalent tonnage now being produced by J. & L. for GM on a conversion basis.

J. & L. also has arranged to borrow \$40 million from 11 banks. Before the GM loan can be made, stockholders must authorize an increase in indebtedness of J. & L. By \$30 million—from \$150 million to \$180 million. A special meeting of shareholders will vote on this next Jan. 17. The stockholders also will vote on whether to increase the number of common shares from 3,500,000 without par value to 7 million \$10 par value, to change each share now authorized and outstanding into two shares of common at \$10 par value.

Canada May Get Less U. S. Steel

Toronto—Although the United States may allocate steel for essential Canadian programs, tightening of steel shipments to general manufacturing may actually slow down delivery into Canada, said the Canadian Manufacturers' Assn. Supplies in Canada are now growing tighter with no relief in sight.

Riverside Metals Asks Copper Order Delay; Sees Labor Leaving

Riverside, N. J.—A 30-day postponement of National Production Authority's order cutting back copper allocations by 15 pct was asked by the Riverside Metal Co. to forestall serious loss of skilled workers "irreplaceable in a wartime labor market and vital to defense production."

James T. Duffy, Jr., president of the nonferrous alloy firm, said that only 10 pct of output is for defense and the remaining 90 pct hinges on the copper supply. Since it was unlikely that issuance of defense orders could be speeded to make a satisfactory transition to defense tempo, Mr. Duffy said, a more realistic base than the January to June period should be chosen to avoid a production lag that means departing help.

Riverside argued in Washington that the present base provides for output 400,000 lb per month less than current production and that the period from August through November is a much fairer base.

Manganese Ore from Brazil

Sao Paulo—About 500,000 tons of needed manganese ore for American use after 1952 will be produced in Brazil's Amapa Territory mines which are now being

constructed with a \$35 million loan from the World Bank.

Bethlehem Steel Corp., in partnership with Brazil's ICOMI, has pledged a market for full mine output. World Bank funds will build a railway from the mines to the Amazon River, near Macapa, and an unloading system for vessels.

Bendix Aviation Buys Plant

Davenport, Iowa—To increase production of aircraft instruments and accessories, Bendix Aviation Corp. has purchased property and a factory building of the Victor Animatograph Corp., here. Malcolm P. Gergusson said the purchase was prompted by increasing military demands. The plant, built in 1947, contains 154,000 sq ft of manufacturing space.

Valves and Fittings Bottleneck?

Washington—National Production Authority officials this week were wrestling with the problem of how to provide enough composition ingot brass to meet the demand for valves and fittings.

This was a bottleneck during World War II. Industry spokesmen are asking that more composition ingot brass be allotted under M-12, permitting the industry to hold onto its skilled manpower while material supplies build up.

SHIPPING PROBLEM: Because of its size, shipment of this huge one-piece cast steel turbine runner necessitated use of two flat cars with a structural steel cradle. Made by the Erie Forge Co., Erie, Pa., the casting moved on a special train during daylight at a top speed of 15 mph. It had a diameter of 17 ft, 4 in. and weighed 165,000 lb. It is for a hydroelectric power plant unit.



Steel's Modest Price Boost Causes Little Fuss in Capital

Washington—Economic Stabilization Agency officials are watching developments closely as steel companies attempt to pull their prices into line to offset increased costs resulting from recent wage agreements with labor.

The officials say they are studying the steel price increases on a company-by-company basis and say further that they would have no hesitancy about taking action where the price boosts seem unjustified or out of line.

Amounts to Token Approval

In effect, this gives token approval to the 5½ pct pattern set last week by United States Steel Corp., particularly since no overt notice was taken by Stabilization Director Valentine such as in the case of the automobile price boosts.

"In the best judgment of the agency," Administrator Valentine said, "it did not seem necessary to take any action (relating to steel increases) at this time."

At the same time, Wage Administrator Cyrus W. Ching made it clear that he would attempt to carry out the intent of Congress with respect to price-wage stabilization. When selective price controls are imposed, he said, the ESA would also impose selective wage controls.

Meanwhile, ESA is planning industry advisory committees to help it work out a practical policy.

Mobile Customs Imports Rise

Mobile, Ala.—Iron ore and crude rubber imports through the Mobile Customs District, Mobile and Gulfport, Miss., were \$300,000 higher in September 1950 than in September 1949, reports the Dept. of Commerce.

Total monthly imports of \$2,864,796 included: \$700,000 in bauxite ore from Surinam; \$540,321 in manganese ore from India and other countries; and \$157,792 in iron ore from Sweden and Brazil.

U. N. Unit to Stimulate Scrap Collections to Reach Output Goal

London—Scrap collections in Europe must be at their maximum to ensure planned record production of 52 million metric tons of pig iron and 69 million metric tons of crude steel in 1951, decided the United Nations Economic Committee's steel branch at its Geneva session.

The committee decided to initiate a new drive to collect steel-making scrap and to revive its panel of scrap experts. It believes that 1951 production goals can be attained providing scrap collections are high and capacity production of coke and iron ore is maintained. More serious shortages of iron ore in 1953 are foreseen.

Fairless Wins Bessemer Medal

London—Ben Fairless, president of U. S. Steel Corp., has been awarded the Bessemer Medal for



Ben Fairless

1951 by The Iron and Steel Institute, London, in "recognition of his distinguished service to the iron and steel industry."

The medal will be presented to Mr. Fairless at the Institute's annual general meeting in London on May 30, 1951.

William Barr, of Colvilles, Ltd., president of the West of Scotland Iron and Steel Institute, was awarded the Sir Robert Hadfield Medal for 1951 for his contributions to steelmaking research.

McGraw Co. Gets Ford Contract

New York—A \$500,000 contract for installation of machinery and equipment at Ford Motor Co.'s new Cleveland engine plant has been awarded to F. H. McGraw Co., this city.

Three-Range Glasses Focus On Efficiency of Myopic Middle-Aged

New York—Eyeglasses with Continuous Vision lenses are adding to the usefulness of middle-aged workers in industry by going bifocals one better. They provide a third seeing range for the employee whose sight is going blurry.

Tests held at the Northern Illinois College of Optometry since 1948 indicate that the three-range spectacles will be of special benefit to middle-aged workers in metal trades, shipping and materials handling industries, and other fields.

Overcomes Fatigue

The lenses bring into focus objects within the important arm's length area, 18 to 50 in. from the eyes. Three segments permit the wearer to see near and far and restore clear vision for vital closer work. Poor sight in the closeup zone lowers working efficiency and leads to fatigue.

Metalworkers and industrial machine operators who wore single vision or bifocal lenses complained to the research clinic's eye doctors that they were unable to see fixtures clearly or to see well enough to insert metal stock into their machines efficiently.

Their eyes were being strained and they found themselves squinting at the micrometer or while reading blueprints. When they were equipped with Continuous Vision lenses, their troubles were over.

British Workers Slated for Raise

London—After negotiations lasting over a year, 2 million engineering workers in Britain's factories and shipyards will get pay increases of up to \$1.54 for skilled workers, with a maximum basic time rate of \$17.94. Raises will follow talks between the Confederation of Shipbuilding and Engineering Unions and employers. The 37 unions had originally asked for \$2.80 per week.

Heppenstall Co. Develops "Prestem", Hot-Working Die Steel

Pittsburgh — The Heppenstall Co. is now marketing a newly developed hot-working die steel in the form of solid press dies, insert dies, upsetter dies, and punches.

Called "Prestem," the new steel will develop a minimum of heat checking and yet resist the plastic flow of hot metal during press forging operations. It is readily machineable at comparatively high hardness, has a high impact resistance, and may be water cooled during press forging operations.

Three Hardness Ranges

Heppenstall Co. is marketing "Prestem" in three general hardness ranges—"A" hardness of 2.95-3.10 Brinell B. D. with a 41-45 Rockwell "C"; "B" hardness of 3.15-3.30 Brinell B. D. and a 36-40 Rockwell "C," and in a prehardened, untempered condition, having a hardness range of 3.10-3.25 Brinell B. D. (38-42 Rockwell "C") for customers' tempering after machining to a precipitation hardness beyond machinability.

When dies are tempered by the customer, says Heppenstall, a hardness range of 2.90-3.00 Brinell B. D. or 45-48 Rockwell "C" will result when tempered at 950°F. If tempering is done at 1050°F the hardness range will be 2.70-2.85 Brinell B. D. and 49-52 Rockwell "C."

Detroit Weighs Copper Cutback

Detroit—While it is still too early to predict the full effects of the 15 pct copper cutback on automobile production, the trade here feels that the slash in copper will not necessarily mean a parallel reduction in auto output. Very limited substitutions could be made and if lighter gage copper could be used, appreciable savings in radiators, wiring and car radios will result.

The possibility of substituting for copper is undoubtedly less promising than switching from aluminum or even steel.

P & H CRAWLER CRANES...

all around the yard!

Your biggest opportunity for cost cutting today is in materials handling in yards! You'll find no surer way to yard-wide efficiency than with a P&H Crawler Crane.

This one machine, operated by one man, gives you the fast, flexible, safe operation that pays big dividends in materials handling. You get more with P&H Added Value features. Write for literature, today.



P & H MAGNET CRANES

For fast, low-cost scrap handling, you can't beat a P&H Crawler Crane with magnet. Quickly converts to crane, clamshell, dragline.



for all-round materials handling...

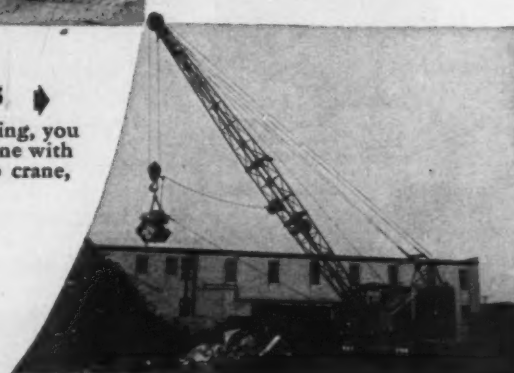


P & H CRAWLER CRANES

Easier operation and safer handling. You'll have smooth, responsive P&H Direct Acting Hydraulic Control. Working in out-of-the-way places and close quarters... save time... save money... with the P&H simplified method of steering and braking.

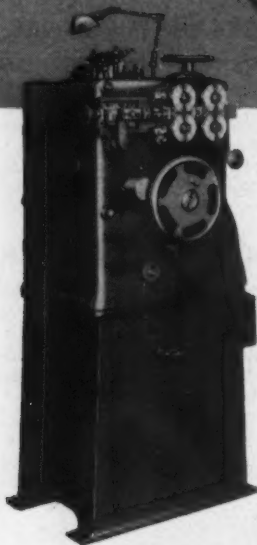
P & H CRAWLER CLAMSHELLS

For swifter handling of bulk materials, anywhere in the yard! Not restricted to areas served by trackage. Wide crawlers and all-weather cabs permit year-round efficient service.



P&H Industrial Crawler Cranes Built in Models for all Yard Requirements

Versatile Torrington
spring coilers
make these



Model W-11,
one of fourteen versatile
Torrington Spring Coilers

SPECIFICATIONS

Wire Diameter Range: .015" to .672"

Wire Length per Spring: 0" to 42"
(Extra Wire Feed Gears Available)

Coil Range (O.D.): 3/32" to 1-9/16"

Production: 23 to 190 springs per minute with variable speed drive

Torsion and other attachments available.

PLUS an amazing range of other intricate springs that meet the most exacting requirements. Professional springmakers from coast to coast agree that a Torrington Spring Coiler can't be beat for speed, accuracy and economy. Your professional springmaker who owns a Torrington spring coiler can make springs to your special needs. If you're uncertain about a source of supply for a special spring you want, our sales department will help you find it or help your springmaker devise tooling to produce it.

THE TORRINGTON
MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT

Chicago Will Be Greater User And Producer of Steel, Says Sykes

Chicago—This section will become a greater steel producing center and steel consumption might continue to grow here at an even faster rate than production, said Wilfred Sykes, executive committee chairman of Inland Steel Co., in an address before the Chicago section of the American Institute of Mining and Metallurgical Engineers.

"It will be seen that the supply of ore available for use in the Chicago district is ample for generations to come, and will allow expansion of the steel industry to cope with the demands of this great manufacturing center," Sykes said.

Mr. Sykes stated that steel consumption of the Illinois-Wisconsin-Michigan area is about 45 pct of the total national consumption and steel production is about 25 pct of the total. He contrasted this with the Pennsylvania-Ohio area which has 25 pct of the national consumption and 50 pct of the steel production. Mr. Sykes declared that Chicago's advantages are proximity to consuming industries and ready access to essential raw materials.

Form New Civil Engineers Unit

New York—A new Engineering Mechanics Div. has been added to the American Society of Civil Engineers with the appointment of an executive committee. Goal of the new unit is to foster "activity and development in applied mechanics and other basic branches of knowledge which form the background and foundation" of the field.

Orders 100 Diesel Locomotives

Birmingham — Orders for 100 new diesel locomotives have been placed by the Birmingham Div., Southern Railway System, with the American Locomotive Co., Electromotive Div. of General Motors, and the Fairbanks Morse Co. Total cost of the order is estimated at \$17 million.

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NSRB Grants 18 Steel Firms Fast Tax Writeoff Certificates

Washington—The National Security Resources Board this week issued 48 tax necessity certificates for rapid tax writeoff to expand defense facilities of 18 steel companies and 3 refractory firms.

The certificates issued to steel firms were for expanded facilities estimated at \$469,266,643. NSRB estimated that this expansion would provide additional capacity of more than 5,500,000 ingot tons, 2,500,000 coke tons capacity, and 2,750,000 pig iron tons capacity with related finishing facilities. Refractories expansion is estimated at \$22 million.

Companies granted tax relief include Republic, Northwest Steel and Wire, Great Lakes, Youngstown Sheet and Tube, Crucible, Armco, Sheffield, Lone Star, Connors, West Virginia Steel and Manufacturing Co., Empire, Woodware Iron, Keystone Steel and Wire, Hazelton Steel and Tubing, Green River Steel, National, McClouth Steel, Sharon Tube.

C-I Tinplate Prices

Pittsburgh—Chiefly for reasons of inventory adjustments, U. S. Steel Co.'s new tinplate, blackplate, and terneplate base prices and extras are not effective until Jan. 16. Other producers have announced Jan. 1 effective dates on base prices, and extra charges are likely to be effective Jan. 1 also.

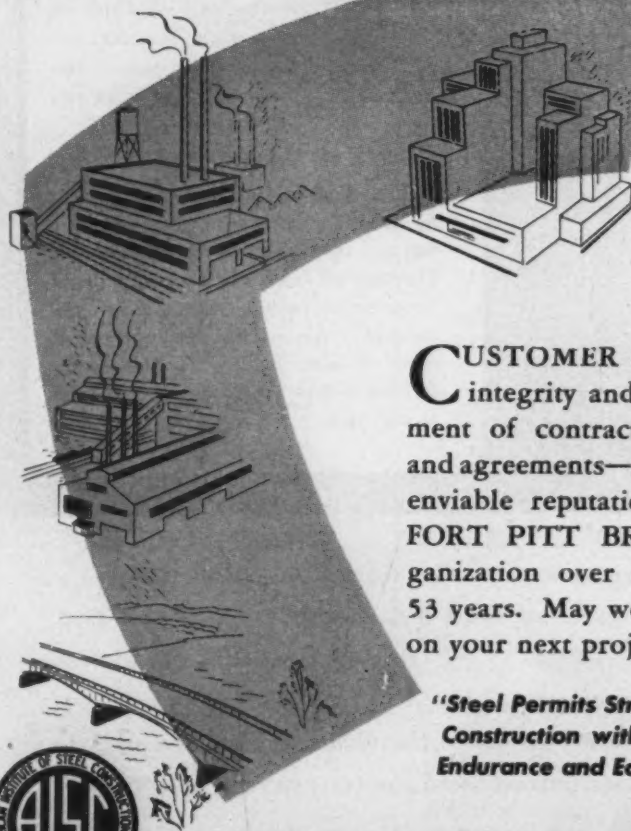
U. S. Steel width extras apply on widths of 26 in. and under, with deductions for widths over 28 in. Basis weight is 100 lb, with extras and deductions applicable above and below this weight, respectively. Length extras vary with basis weight and length. Quantity extras apply under 7500 lb. Resquaring extras are 40¢ for ends or sides, 60¢ for ends and sides.

Carnegie - Illinois hollowware enameling extras, effective Dec. 1, are 10¢ for 30 gage, 30¢ for 31 gage. Width extras and deductions apply as above. Length extras are 5¢ over 40¼ to 48 in., 25¢ over 48 to 124 in.



Look to FORT PITT BRIDGE

when dependable service and good workmanship are important



CUSTOMER SERVICE, integrity and the fulfillment of contract promises and agreements—has built an enviable reputation for the FORT PITT BRIDGE organization over more than 53 years. May we serve you on your next project?

"Steel Permits Streamlining Construction with Safety, Endurance and Economy."



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Member American Institute of Steel Construction

General Offices, Pittsburgh, Pa. . . . Plant at Canonsburg, Pa.

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NEW YORK, N.Y. . . . 441 Lexington Avenue
CLEVELAND, OHIO . . . Bulkley Building

COLUMBUS, OHIO . . . Huntington Bank Bldg.
DETROIT, MICHIGAN . . . New Center Building

National Emergency Would Permit Negotiation of Contracts

Washington—Declaration of a National Emergency by President Truman would give the administration one major power of prime importance to industry. This would permit the negotiation of any or all government contracts. Existing law is broader than that in effect at the outset of World War II, but it still limits negotiated contracts to 17 specific cases.

Refusal Means Recapture

No additional power is needed to get surplus war plants, sold under the security clause, back into war production. The procedure would be for the government to offer such plants military contracts. If refused, the government could recapture the plant immediately.

A national emergency would also give the President authority to seize railroads and other communications facilities.

However, these powers are still effective under World War II emergency proclamations. The government is still nominally running the railroads as a result of last summer's strike threat.

It is generally agreed that proclamation of a national emergency would be of value principally from the psychological standpoint of convincing the people of the threat to the country. It would also spur Congress to act on future requests for emergency legislation.

Life for Old Laws

Actually, the emergency would bring to life numerous old statutes, but most of these have been superseded by laws such as the Defense Production Act. Several minor laws, however, could be brought into effect, including those authorizing placement of the Coast Guard under the Navy, terminating ship charters, restricting explosives manufacture, and terminating the 8-hour day and some minimum wage laws in defense industries.

2 STEPS to stepped-up handling

1. Use durable and dependable trucks. Battery trucks are a profitable investment: their electric drives start smoothly, have few wearing parts, use no explosive fuel, run without warm-ups or tune-ups. They run with a minimum of down-time!



2. Equip them with trouble-free batteries . . . the kind that take temperature extremes, jars, jolts and accidents as part of the day's routine. All of which is another way of saying: use Edison Batteries . . . The Standard of Comparison for the Industry.

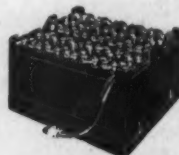


For this kind of duty, Edison cells have no equal. They're built of steel inside and out, and their electrolyte preserves steel. They are not injured by accidental short-circuiting or reverse charging. Case histories show that many of them which have fallen off docks or down elevator shafts, or been in fires and floods, are still hard at work today!

For full information, write today for free booklet SB 2039 and a current price quotation. You'll find EDISONS cost little more than other makes of batteries . . . and they pay this back over and over in terms of low upkeep and long, long life. *Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey. In Canada, International Equipment Company, Ltd., Montreal and Toronto.*



EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES



Typical Truck Battery

SPECIFY dy chek dye penetrant metal inspection

Simplified
Non-Destructive
Testing...
Any Metal—
Anywhere

FASTER,
CHEAPER,
MORE ACCURATE
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Portable,
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for
Details



Division
of
Northrop
Aircraft,
Inc.

1505 EAST BROADWAY
HAWTHORNE, CALIF.



STEEL CONSTRUCTION NEWS

Fabricated steel awards this week included the following:

- 1300 Tons, Wynnewood, Pa., three additional apartment units, Wynnewood Apartments, to Bethlehem Steel Co., Bethlehem, Pa.
- 1000 Tons, Pottstown, Pa., new plant, Doehler-Jarvis Corp., to Frank M. Weaver & Co., Lansdale, Pa.
- 470 Tons, Wilmington, Del., RR bridge on Cristiana River for Pennsylvania Railroad, to Morris Wheeler Co., Philadelphia.
- 410 Tons, Luzerne County, Pa., bridge for Pennsylvania Dept. of Highways, to Pinebrook Iron Works.
- 240 Tons, Lansdale, Pa., addition to warehouse for Lansdale Tube Co., to Lehigh Structural Steel Co., Easton, Pa.
- 175 Tons, Fredericksburg, Va., American Viscose Co. acid recovery building No. 2, to Belmont Iron Works.
- 133 Tons, Putnam, Conn., clear span composite steel girder bridge and bituminous concrete approaches, H. S. Ives, Norwich, Conn., district engineer, Jones Construction Co., Columbia, Conn., low bidder.

Fabricated steel inquiries this week included the following:

- 870 Tons, Berks County, Pa., bridge, Pennsylvania Dept. of Highways, bids due Dec. 28.
- 600 Tons, Chicago, 23rd Street viaduct for Chicago park district, Carroll Construction Co., Chicago, low bidder.
- 255 Tons, Waukesha County, Wis., bridge F 06-24/.
- 230 Tons, Ft. Meade, Md., bridges on Baltimore-Washington Parkway, bids due Dec. 14.
- 170 Tons, Indiana County, Pa., bridge, Pennsylvania Dept. of Highways, bids due Dec. 27.
- 150 Tons, Boston, freight terminal, bids due Dec. 18.
- 135 Tons, Iroquois County, Ill., bridge section 141 B. Bids due Dec. 15.
- 110 Tons, Marionette County, Wis., bridge project S10544/1/.
- 109 Tons, Beaver Falls, Pa., bridge reconstruction, Pennsylvania Dept. of Highways, bids due Dec. 28.

Reinforcing bar awards this week included the following:

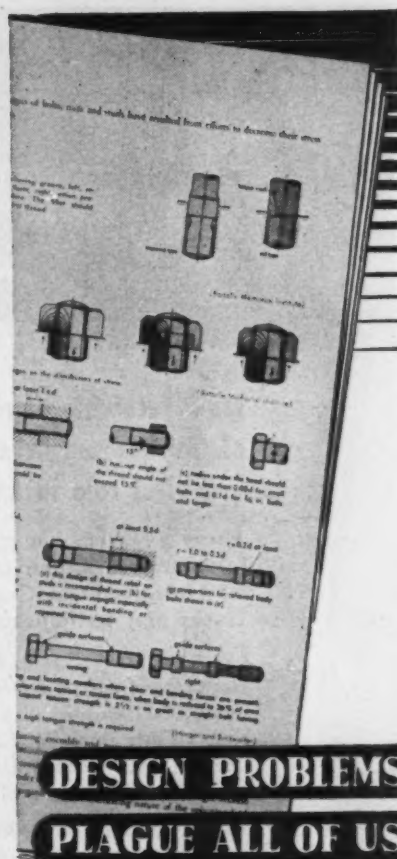
- 1500 Tons, Sunbury, Pa., Pennsylvania Power & Light Co., power station unit No. 4, to Bethlehem Steel Co., Bethlehem.
- 220 Tons, Newtown and Southbury, Conn., Housatonic River Bridge. Relocation H. S. Route 1. Mariana Construction Co., New Haven, Conn., low bidder.
- 160 Tons, Auburn, Ala., dormitory for Alabama Polytechnic Institute, to Truscon Steel Co., Birmingham, Ala.
- 127 Tons, Luzerne County, Pa., Pennsylvania State Highway Route 40023, Sections 5 and 7, B. G. Koon Construction Co., general contractor, to Bethlehem Steel Co., Bethlehem.

Reinforcing bar inquiries this week included the following:

- 468 Tons, Chicago, Racine Ave. pumping station for sanitary district.
- 200 Tons, Barrington, Ill., building for Jewel Tea Co. A. L. Jackson Co. low bidder.

Steel piling awards this week included the following:

- 910 Tons, Newtown and Southbury, Conn., Housatonic River Bridge, relocation H. S. Route 1. Mariana Construction Co., New Haven, Conn., low bidder.



To serve well, a machine part—even when made of good steel, properly treated—must be properly designed.

A new 72 page booklet, sent free on request, discusses the vital relation between design, good steel and its satisfactory treatment.

Climax Molybdenum Company

500 Fifth Avenue
New York City

Please send your
FREE BOOKLET
3 KEYS TO SATISFACTION

Name.....
Position.....
Company.....
Address.....

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F24



New MAYTAG Automatic Washer Plant Uses 14 **BAKER TRUCKS**

From receiving of raw materials to shipping of finished washers BAKER FORK TRUCKS play a vital role in keeping costs to a minimum

The new Maytag Automatic Washer plant at Newton, Iowa was designed to provide the most efficient movement and handling of materials. 14 Baker Fork Trucks play an important role.

For Example:

Handling coils of steel strip weighing from 7,000 to 10,000 pounds (top illustration) with a Baker Heavy Duty Fork Truck has made it practical to buy steel in full-width coils and slit them to required widths in their own plant.

Machined parts are received and stored in special parts bins—designed for easy access and visibility, and for safe high tiering due to built-in skids for handling with fork trucks. (See left, below).

Diecast metal is received in bundles of pigs, bound with steel strap in a manner to permit unloading and tiering with Baker 4,000 pound fork trucks without the use of skid platforms or pallets.

One operator with a Baker (light-weight, low-cost) Fork Truck loads cars with 80 to 100 finished machines in the time it would take four men with hand trucks to do the job. (See right, below).

Our material handling engineers are available for planning comparable savings in your plant.



BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company

1227 West 80th Street Cleveland 2, Ohio
In Canada: Railway & Power Engineering Corporation, Ltd.

Baker INDUSTRIAL TRUCKS

NPA Puts Tight Controls On Copper Scrap Stocks, Distribution

Washington — Tight controls were imposed on copper scrap this week by the National Production Authority. It issued order M-16 providing inventory ceilings and procedures for distribution.

A safeguard against gray marketeers is set up by confining acceptance and delivery to scrap dealers, refiners, brass mills, brass and bronze foundries, ingot makers, and miscellaneous producers who regularly use copper scrap in normal operations.

Inventories of scrap dealers are limited by the order to one-third of the delivery by weight of first half 1950 total delivery. Mills are directed to guard against accumulation of "excess" stocks of mill scrap.

Melting and other processing of mill scrap is limited to the mills themselves except by specific NPA approval. Sale of mill scrap is also forbidden except to regular scrap-pies, refineries, and other producers such as foundries which require such scrap for normal operation.

Likewise, conversion or toll agreements where the scrap owner retains the title are made unlawful unless they are first cleared or approved by NPA. The order applies to all copper and copper-base alloy scrap containing 40 pct copper by weight and includes brass mill scrap, artillery cases, and fired or demilitarized cartridges.

Lists Use of Gray Iron Coatings

Indianapolis, Ind.—Use of metallic or non-metallic coatings for gray iron to increase resistance to corrosion, wear and oxidation and improve appearance standards was outlined by C. O. Burgess, technical director of Gray Iron Founders' Society, Cleveland, before the local chapter of the American Foundrymen's Society here.

Mr. Burgess said the use of such coatings is of vital significance as a means of conserving essential alloying elements which are now in short supply.

WE INCREASED PRODUCTION 71% WITH J&L "E" STEEL



J&L STEEL

(a story* about how to win customers and influence prospects)

"Got a minute? Well, let me tell you about what happened at our machine shop a couple of months ago when we first tried that new J&L "E" Steel. You wouldn't believe it was possible! (Confidentially, neither did we until we proved it to ourselves.) Here's what happened.



"We got an order to produce a big lot of plunger stops for solenoid starter switches. They're tricky to run, and you've got to be pretty careful every second. We'd read about "E" Steel in some of J&L's ads, and decided we might try some on this job.

"So we ordered some 17/32" E-33 "E" Steel stock, set up our B&S #2 and B&S #0 Automatics and began to turn out parts. We had used B-1113 for this job before and had been getting 350 pieces per hour. But we soon realized we could machine much faster with "E" Steel, and we kept increasing speed until we were getting an average of 600 parts per hour. That's a 71%



production increase!

"Next thing we discovered was that our tools were lasting twice as long and the chips were coming off better

with "E" Steel than they did with B-1113. We also found that the finish on the parts had improved from 20% to 25%.

"That's why we've been using "E" Steel. We turn out work much faster and can take on more jobs. Our men like the way "E" Steel machines and our customers get better parts and better service. Everybody benefits!"

Get your copy of the booklet titled "A Progress Report on 'E' Steel." It outlines a series of 11 case histories from machine shops that have used "E" Steel with excellent results. Write for your copy.



Jones & Laughlin Steel Corporation
403 Jones & Laughlin Building
Pittsburgh 30, Penna.

Please send me a free copy of
"A Progress Report on 'E' Steel."

Name _____

Title _____

Company _____

Address _____

"E" Steel (U.S. Pat. No. 2,484,231) is easily identified by the distinctive blue color on the end of every bar.

JONES & LAUGHLIN STEEL CORPORATION

From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY and JALLOY (hi-tensile steels).

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

December 14, 1950

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"It's the THOMAS TWO-STEP, Plunkett!"

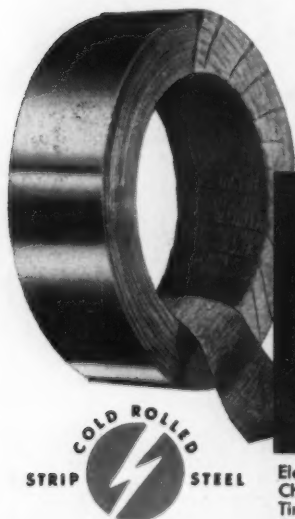
The Thomas "two-step"? It's mighty popular with many a light metals fabricator these days. It's so easy to learn . . . and profitable to know. You start with pre-coated THOMAS STRIP. Then take just two steps—fabricate . . . assemble—and, in many cases, you'll have produced a finished, saleable product.

★ ★ ★

Try "two-step" production using Brass Coated THOMAS STRIP, for example. No need for costly surface preparation. This pre-coated strip steel comes to you all ready for immediate fabrication. Cleaning, plating, buffing after fabrication all may be eliminated. Your finished parts have a uniform brass coating, inside and out. And, the brass coating protects parts in process against corrosion.

Work it as you will. The tight brass pre-coat—unitized with its strip steel base of controlled metallurgy under The Thomas Process—now is more generous than ever . . . better able to stand severe fabrication without cracking, peeling or flaking.

To offer "two-step" production for a wider range of products, Brass Coated THOMAS STRIP now can be furnished up to 20-inches wide, in gauges .010" to .035". Write us for test samples and complete information.



THE THOMAS STEEL COMPANY
WARREN, OHIO
Specialists in Cold Rolled Strip Steel

Thomas Strip

SPEEDS PRODUCTION . . . CUTS COSTS

Electrolytically pre-coated with Zinc, Copper, Brass, Nickel and Chromium • In Natural, Planished and Buffed Finishes • Hot Dip Tin and Lead Alloy Coated • Alloy Strip Steel • Annealed Spring Steel • Uncoated Strip Steel • All Produced to Your Specifications.



Uniform Inspection Standards

Washington—Under a new regulation just issued, Sec. XIV of the Armed Services Procurement Regulation, all inspection of supplies and services contracted for by the military will be in accordance with the uniform standards established by the Defense Dept.

These include standards as to sampling procedure, statistical quality control needs, gage design, use and care, policies as to exchange of services, methods of interpreting specifications, and standardized forms.

If goods do not pass inspection and if an urgent need exists, such supplies may be accepted and an adjusted price worked out with the contractor. The new regulation will apply to all contracts made on and after Jan. 1, 1951.

Detroit SAE Hears Metallurgists

Detroit—John L. Ham, Climax Molybdenum Co., and Dr. R. L. Jaffee, Battelle Memorial Institute, spoke at the Dec. 4 meeting of the Detroit Section, Engineering Materials Activity meeting of the Society of Automotive Engineers.

Mr. Ham described the arc-cast process for making pure molybdenum billets. This process converts raw metal powder into usable cast material and is one of the most promising methods for increasing the production of pure molybdenum.

The subject of Dr. Jaffee's talk, "Titanium — An Interim Appraisal," was aimed at acquainting materials people and designers with the swiftly moving technology of titanium and titanium alloys.

Locomotives Tour Railroads

Schenectady — A nation-wide demonstration tour by two 4-unit 6400 hp dual-purpose locomotives has been started by American Locomotive and General Electric. One of the 1600 hp, 240,000 lb locomotives will visit Eastern railroads, the other Western railroads.



Hush Before Christmas

The mysterious season of Christmas approaches.

A hush of anticipation silences all else while the children wait, full of confidence, for the sound of sleighbells and the hearty laughter of their all-knowing friend.

What more appropriate a time to pause a moment and wish each other well! Even in these days of uncertain peace, we, too, look ahead not without hope that life may become more secure and joyous for all.

In this Christmas season, may you—our customers and friends—be again assured of the blessings of peace and prosperity. And be assured, also, that we, at Wisconsin Steel, shall do our very best to merit your continued good will and friendship.



**WISCONSIN STEEL COMPANY, Affiliate of
INTERNATIONAL HARVESTER COMPANY**

180 North Michigan Avenue • Chicago 1, Illinois

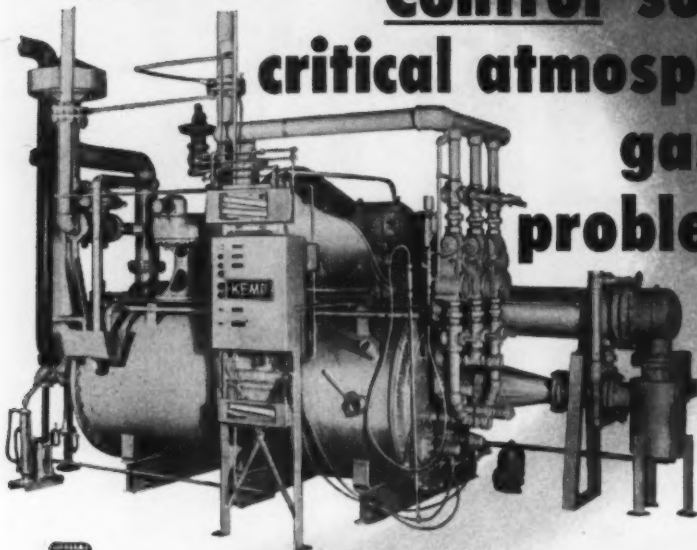
WISCONSIN STEEL

December 14, 1950

133

NOW!

Constant Control solves critical atmosphere gas problems!



KEMP ATMOSPHERE GENERATORS

END MIXTURE PROBLEMS. PRODUCE SAME ANALYSIS GAS REGARDLESS OF DEMAND... HAVE EXCLUSIVE SINGLE AIR-GAS CONTROL!

You need the correct protective atmospheres for heat-treating operations! Here's how Kemp Atmosphere Generators solve your problems once and for all! One single knob sets the air-gas mixture accurately, permanently. No matter what the demand, you get the same analysis inert gas from 1% to 100% of capacity. With Kemp there is no need for tinkering!

ABSOLUTELY DEPENDABLE

Kemp Generators burn ordinary gas just as it comes from the mains. A famous Kemp Carburetor, part of each installation, assures complete combustion... producing a clean, chemically

inert gas containing 88% nitrogen, 12% CO₂... a gas so pure it is used without further processing in the manufacture of aspirin and laboratory chemicals, fine paints and a host of other products.

SEND FOR PROOF!

Whether you need special atmospheres for purging, fire protection, blanketing or any steel process... specify Kemp. For technical information write for special bulletin. To find out how much you can benefit: tell us how you produce inerts now; we'll show you how Kemp can solve your problem! Mail coupon today!

KEMP

OF BALTIMORE

ATMOSPHERE GAS GENERATORS

THE C. M. KEMP MFG. CO., Dept. C-12
405 E. Oliver St., Baltimore 2, Md.

Gentlemen: Send me information. Also, show me how much we can save on inerts. We now spend..... per mcf for inerts used in..... (process.)

CARBURETORS
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FIRE CHECKS
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ADSORPTIVE DRYERS
METAL MELTING UNITS
SINGING EQUIPMENT
SPECIAL EQUIPMENT

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Company
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City Zone State

FREE

PUBLICATIONS

Continued from Page 34

mounting data are contained; a few typical applications taken from hundreds of installations of Commercial cylinders in use are shown. Several types of pumps, motors and valves are also described. *Commercial Shearing & Stamping Co.*

For free copy insert No. 8 on postcard, p. 35.

Steel Strapping

Tools and materials for the Brainard strapping system are described in a new 18-p. booklet. Various types of regular and heavy duty strapping in a number of styles and finishes, strapping tools and accessories, electro galvanized strip steel, electric welded steel tubing, cold rolled strip steel and beaded hoops are shown. *Brainard Steel Co.*

For free copy insert No. 9 on postcard, p. 35.

Bulldozers

Various models of Williams-White bulldozers, with long stroke and accessible die space, requiring low initial cost and minimum maintenance, are described in a new 4-p. bulletin. The folder lists general and alternate specifications, and contains a bulldozer detail table covering the double and single geared series. Special features are also described and illustrated. *Williams-White & Co.*

For free copy insert No. 10 on postcard, p. 35.

Precious Metal Products

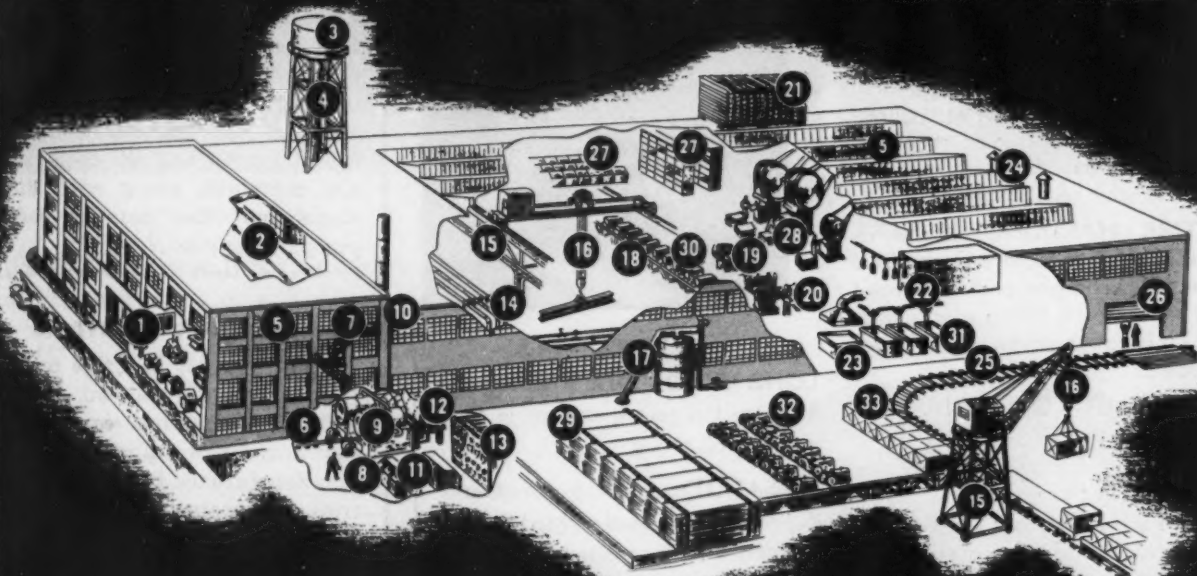
Baker precious metal products for industry are described in a new 8-p. booklet showing a variety of platinum laboratory ware, spinnerets, mass catalysts, fine wires and electrical contacts and contact materials. Also shown are Deoxo gas indicators and purifiers and industrial gas-fired furnaces. *Baker & Co., Inc.*

For free copy insert No. 11 on postcard, p. 35.

Close-Coupled Pumps

Outstanding features of Alta close-coupled centrifugal pumps are listed in a new 12-p. catalog. The booklet shows how these pumps of

LOST: \$6,000,000,000 FROM RUST!



MAINTENANCE USES

1. Products display
2. Sprinkler system
3. Water tank
4. Riser and Tower
5. Window sash
6. Piping
7. Fire escape
8. Boiler room maintenance

9. Boiler setting

10. Gutters and down spouts
11. Stored metal
12. Various tanks and air reservoirs

13. Electrical control panel, bus bars, battery terminals, conduit

14. Valves, bonnets, stems
15. Structural steel
16. Chains and cables
17. Piping—Insulation on piping
18. Conveyors

19. Templates, dies, and gauges in storage

20. Stored machinery
21. Cooling tower
22. Drying ovens
23. Acid tank and ventilator hood
24. Ventilators
25. Railroad track, rail joints
26. Steel overhead doors

PRODUCTION USES

27. Parts in storage
28. Metal stampings
29. Stock metal in storage
30. Production parts
31. Dipping production items
32. Finished production items
33. Export shipments

HOW MUCH IS YOUR PLANT CONTRIBUTING?

This year—every year, rust takes its tremendous toll in industrial plants throughout the country. In dozens of places throughout your building, from water tower to boiler room, in structural metal as well as during the fabrication of metal products, rust is silently at work, destroying valuable equipment, lowering profits, increasing maintenance costs.

Regardless of the cause of corrosion in your plant, or the extent of

protection necessary, there is a correct NO-OX-ID rust preventive designed specifically to give you positive protection—chemically, by stopping corrosive action, mechanically by sealing off corrosive elements.

Check your plant for the typically vulnerable areas illustrated. Let the Dearborn sales engineer make a complete Plant Inspection Survey and then recommend the correct NO-OX-ID.



There is a correct Dearborn NO-OX-ID to combat and protect against rust wherever it threatens.

DEARBORN CHEMICAL COMPANY

General Offices: 310 S. Michigan Ave. • Chicago 4, Illinois

Dearborn

Reg. U. S. Pat. Off.

THE ORIGINAL RUST PREVENTIVE

NO — OX — ID
IRON + OX = RUST

Dearborn Chemical Company
310 S. Michigan Ave., Dept. IA
Chicago 4, Illinois

Gentlemen:
Please send me a copy of your introduction to NO-OX-ID rust preventives.

Name.....

Company.....

Address.....

City..... Zone..... State.....

ROTARY GAS CARBURIZERS

A "First" by A.G.F.

A.G.F. Rotary Carburizers afford economies of operation that permit a substantial reduction in the cost of your heat treating.

WORK HANDLING IS MINIMIZED. A.G.F. Rotary Carburizers are easily charged and discharged by means of a tilting mechanism, which is power driven on the larger models.

UNIFORMITY OF PRODUCT is assured by:

1. Retort rotation thoroughly mixing the work.
2. Positive control and maintenance of atmosphere in the retort.

LONG ALLOY LIFE is obtained because the retort remains in the heat at all times.

VERSATILITY. A.G.F. Rotary Carburizers can be used without modification for clean hardening, annealing, normalizing, etc.

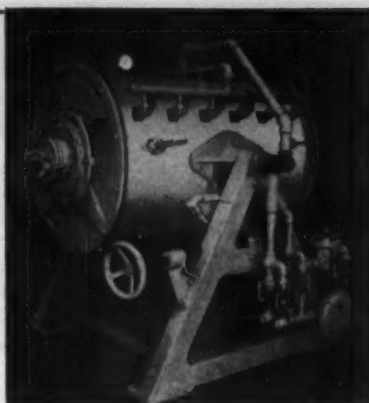
Write for Catalog C-1304 describing Rotary Carburizers and other A.G.F. equipment.

AMERICAN GAS FURNACE CO.

Elizabeth



New Jersey



FREE PUBLICATIONS

Continued

erate in any mounting position at high efficiencies, and practically eliminate end thrust on the ball bearings through special design of single suction impellers. Selection tables for 50 and 60 cycle speeds are contained, along with dimensional and other data on pedestal pumps. *Gorman-Rupp Co.*

For free copy insert No. 12 on postcard, p. 31.

Temperature Controls

What you get in Crise temperature controls for gas, oil, stoker or hand fired heating equipment is shown in a new 8-p. catalog. Combination furnace fan and limit controls, hot water temperature controls and automatic damper controls are among the items described. Horse power ampere ratings are listed. *Crise Controls Div., Acro Mfg. Co.*

For free copy insert No. 13 on postcard, p. 31.

Mill Crane Bulletin

A new 12-p. booklet describes and illustrates the many features of P&H Mill Cranes. Photographs showing typical installations in various mill departments are included. *Crane Div., Harnischfeger Corp.*

For free copy insert No. 14 on postcard, p. 31.

Pallet Handling

Features of the Lyon-Raymond hydraulic pallet lift truck that result in time and storage space savings are detailed on a new data sheet listing specifications and showing typical uses. Particularly adapted to handling double-face pallets, the unit has standard 4-in. lift and is available in capacities of 4000 and 6000 lb, as shown in the bulletin. *Lyon-Raymond Corp.*

For free copy insert No. 40 on postcard, p. 31.

Additives Formula

Formulas for using Alox additives in rust preventives, lubricants, motor fuels and fuel oils are presented in a new 6-p. folder. Examples of the many uses for these oxygenated hydrocarbons are detailed in the bulletin, with suggested formulas for use. Physical and chemical properties are listed. *Alox Corp.*

For free copy insert No. 41 on postcard, p. 31.
(Resume Your Reading on Page 35)



Specify your span. Name your lift. Call your capacity—5 tons to 150—and we'll design and build the crane you want, precisely as you want it. We've been doing this for the past 47 years for some of the hardest-to-please people in your business. We are also a leading supplier of structural steel, steel buildings and gray iron castings.

Write for new catalog.

BEDFORD FOUNDRY & MACHINE CO.

Bedford, Indiana

New York Office — 280 Madison Ave. — Murray Hill 5-0233

BEDFORD CRANES

Lower cost Jig Grinding

proved by Vulcanaire for over **4** years

HOW? You place the Vulcanaire quickly in the spindle of your jig borer or mill.

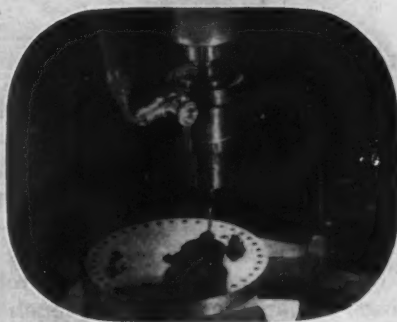
NOW! You can locate—finish grind holes in hardened steel to "tenths" at controlled speeds up to 65,000 R.P.M....grind dowel holes—square with a ground base...move location of holes in hardened steel blocks...grind interchangeable holes in hardened sections...grind .032 to 1/8" holes with diamond impregnated laps...grind contours and relief with tungsten carbide burrs...grind radii in die sections...grind contours in gages...jig grind large and awkwardly shaped components...eliminate jig bushings in tools where close spacing is essential.

PRECISION! Jig ground requirements are being designed into tools by the most enlightened engineering departments...Jig ground the hardened die, stripper plate, and die holder all fit together...uniform clearance means longer runs.

ADVANTAGES! The investment is less than for many Jig Boring accessories such as a rotary table...the Vulcanaire can be put on and taken from the machine in a few seconds...the Vulcanaire is completely portable (all accessories are platform mounted)...the system can be used between several machines of various capacities...employing both the 10,000 and 20,000 series, components with various sized holes from the very smallest to 4" in diameter can be Jig Ground...the average Jig Borer operator becomes proficient at Jig Grinding after very little experience.

TOPS IN PRECISION!...the Vulcanaire is precision built throughout and is constructed of alloy and tool steel. Super precision bearings, preloaded with our special fixtures are used, with all traces of radial and end clearances removed, resulting in Vulcanaire Jig Grinding to "tenths".

For quotation and literature please mention machine tool application.



FOR JIG BORERS OR MILLS



COMPLETE SYSTEM INCLUDES
DUST ELIMINATION

Vulcanaire

BUILT BY TOOLMAKERS
FOR TOOLMAKERS

VULCAN TOOL CO., LORAIN STREET, DAYTON, OHIO

SWITCH

FROM CASTINGS
LIKE THIS

TO NON-GRAN
CENTRIFUGAL
CASTINGS

Eliminate Porosity! Improve Physical Properties!

Where porosity problems must be met in handling liquids or gases many concerns find the trouble-saving answer in Non-Gran Centrifugal Castings. They are leak-proof—assure greater strength, take more punishment, last longer.

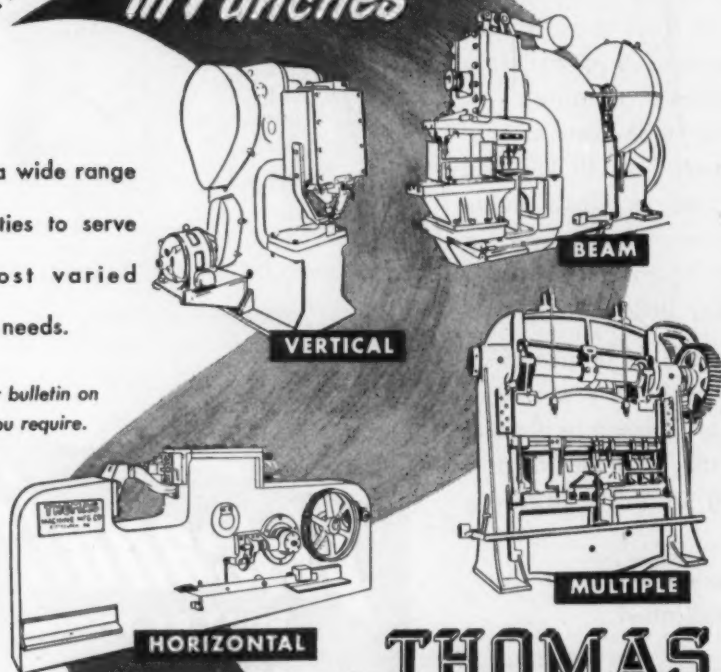
If you use liners, sleeves, rings, rolls, bushings, etc., in bronze alloys—rough or machined—check with Non-Gran. Request booklet—"Our Story In Pictures." American Non-Gran Bronze Co., Berwyn, Pa.



THE TREND IS TO THOMAS in Punches

Made in a wide range
of capacities to serve
your most varied
punching needs.

Send for bulletin on
type you require.



THOMAS
MACHINE MANUFACTURING COMPANY
PITTSBURGH (23), PA.

24

— PUNCHES • SHEARS • PRESSES • BENDERS • SPACING TABLES —

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NEW

PRODUCTION IDEAS

Continued from Page 38

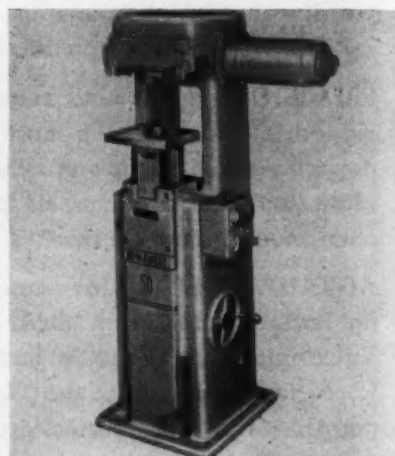
tend the range of cross sectional areas that any flash welder can accommodate. *Kingsley A. Doult.*

For more data insert No. 28 on postcard, p. 35.

Marking Machines

All-pneumatic model will mark
up to 1200 pieces per hour.

A new line of general purpose marking machines, known as the Noblewest 50 series, consists of all-pneumatic, semi-pneumatic and hand operated models. All are suited for trade marking, part numbering, codifying and serial number-



ing on metal, wood, and plastics. The machines use the Noblewest roll-marking process for trouble-free marking and lifelong impressions on flat or round surfaces, including precision graduating, serial numbering and knurling. This roll-marking process avoids shock to marking die or the piece being marked and is used to mark such close-tolerance parts as piston rings without straining or distorting them. *Noble & Westbrook Mfg. Co.*

For more data insert No. 29 on postcard, p. 35.

Universal Wheel Dresser

Capable of dressing a series of
angles with all locations held.

The new universal dresser dresses a complete form rather than a single radius and angle tangent.

THE IRON AGE



Finishing Costs of Castings Drop

at T. SHRIVER & CO., Inc.

when
dependable **GAS** goes
to work
drying sand molds

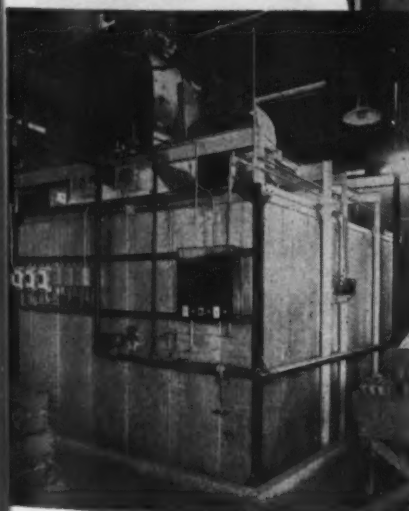
A WAY TO SAVE DOLLARS in the foundry is reported by T. Shriver & Co., Inc., Harrison, N.J., one of the world's largest makers of filter presses. They once made green sand molds which produced castings requiring much cleaning and considerable finishing. Now, these labor costs are reduced by making molds and cores dried in a Gas-fired oven. They produce far cleaner castings, requiring less finishing. Moreover, with a greater moisture content in the products of gas combustion, cores and molds are dried in humidified air, which is helpful in eliminating checking.

The Gehrich mold-drying oven is 15' deep, 12'9" wide and 16' high overall; working space measures 12' x 14'4" x 8'. Heating equipment includes a Rockwell external direct Gas-fired air heater, fired with 530 Btu Gas. Temperature of this oven is controlled by a Bristol indicating thermometer. A high velocity fan provides ten changes of air per minute, delivering the heater air at 500° F. to ceiling distributor ducts. Blown through the process zone, air returns to heater. A ventilating fan, placed forward on the oven roof removes moist air.

Remember—GAS permits precise temperature control. It's dependable, economical, and readily adaptable to serve your particular needs. Your Gas Company Representative can put Gas to work for you—call him today.

Right—A charge of sand molds moves into Gehrich Gas-fired oven. Note ducts on oven ceiling for recirculating hot air.

Below—Starting switches, Gas-feed regulators and automatic controls on rear oven wall.



MORE AND MORE...

THE TREND IS TO **GAS**

AMERICAN GAS ASSOCIATION

420 LEXINGTON AVE., NEW YORK 17, N.Y.

December 14, 1950

139



"TOOLED UP"

FOR EFFICIENT PRODUCTION

Whenever you see a lineup of Clearing presses like this one in the Studebaker plant at South Bend, you know the management is going after profits by aggressive production. Indeed, with competitive conditions putting effective restraint on selling price, you've got to hold costs down if you expect to get volume business.

As Studebaker and so many other leading manufacturers know, they'll get top production efficiency from Clearing presses. Accurate stampings, thanks to Clearing precision, will assemble easily and contribute to lower costs all down the line.

Because these are provable facts, you'll find more and more of the world's stamping work—large and small—being done on Clearing presses. Let us show you how a Clearing press, or several of them, can step up production efficiency in your plant. It costs you nothing to consult our engineers.

CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION

CLEARING MACHINE CORPORATION

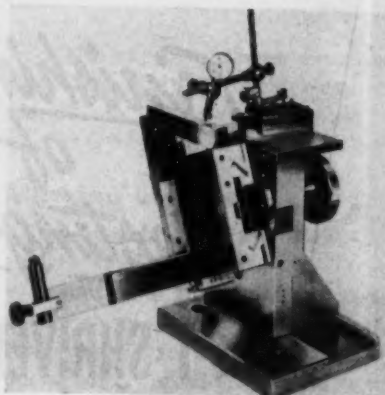
800 WEST 65TH STREET • CHICAGO 38, ILLINOIS



NEW PRODUCTION IDEAS

Continued

This is possible through movements in the column and base with gage block application. The angles



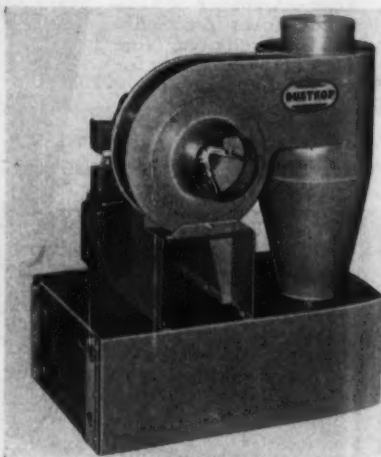
may be set with sine bar in addition to graduations. The dresser may be used under the wheel or at the side and all settings may be made without removing from machine. *Universal Form Tool Co.*

For more data insert No. 30 on postcard, p. 11.

Dust Collector

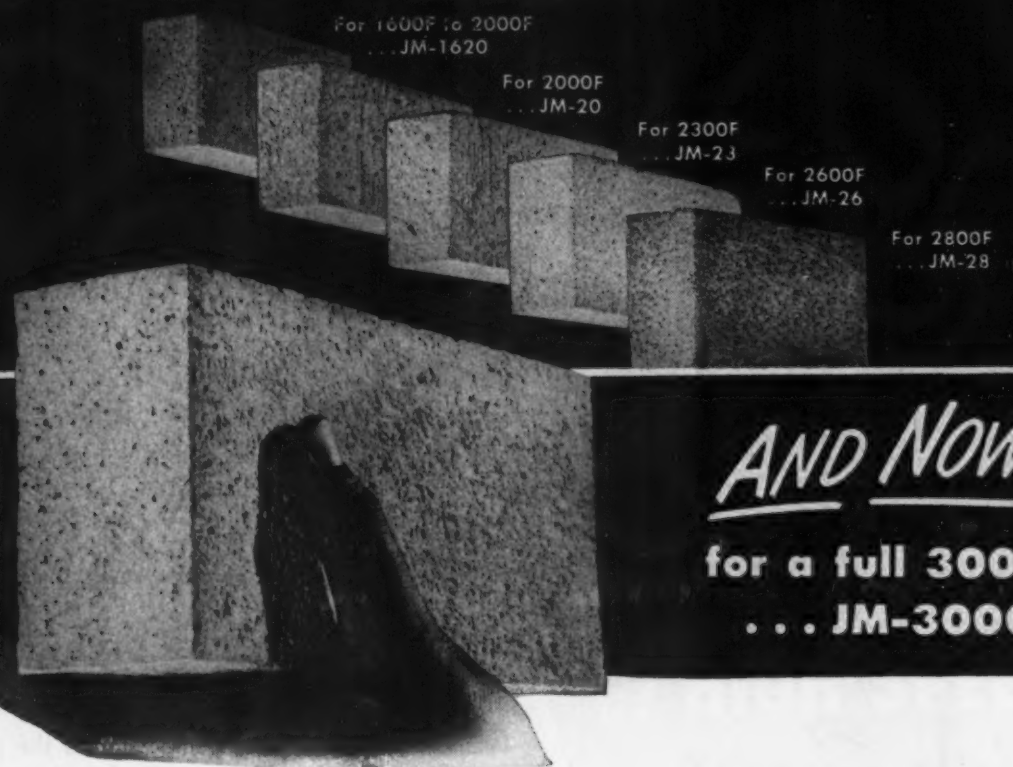
Exhausts cleaned air to outdoors.

Rated at 885 cfm with 3-in. static suction the model 8N50 dust collector is recommended where outside exhaust of cleaned air is required due to state regulations or



to the presence of toxic fumes or vapors. Features are portability, immediate installation and compactness. The dust laden air enters the unit at the 5-in. diam inlet; dust is taken out in the cyclone separator and deposited in the storage compartment which comprises

MEET the family of Johns-Manville Insulating Fire Brick...



AND NOW
for a full 3000F
... JM-3000

HERE IS AN OUTSTANDING FAMILY of insulating fire brick for back-up or exposed use... the only family of its kind... that gives you a complete range... a quick heating insulating fire brick for every purpose.

By taking advantage of the quick heating characteristics of these insulating fire brick, you'll benefit through important savings in fuel because of the quicker rise to proper operating temperature in the

furnace. This is a result of the low heat storage capacity and low thermal conductivity characteristics of the brick. These factors are especially important where furnaces are being intermittently operated.

The same materials can also be obtained in large size units as Johns-Manville Insulating Fireblok. This product has many advantages over the smaller size fire brick, from both a construction and stability standpoint. They can be quickly applied

because they are easy to cut and fit. J-M Insulating Fireblok provide additional heat savings because they reduce the number of joints, and require less mortar for bonding.

Why not have a Johns-Manville insulation expert call to tell you more about ways in which you can save by using these insulations in your furnaces. Write Johns-Manville, Box 290, New York 16, N. Y. for further information.

	JM-1620	JM-20	JM-23	JM-26	JM-28	JM-3000
Densities, lb per cu ft.....	29	35	42	48	58	63-67
Transverse Strengths, psi.....	60	80	120	125	120	200
Cold Crushing Strengths, psi.....	70	115	170	190	150	400
Linear Shrinkage,† percent.....	0.0 at 2000 F	0.0 at 2000 F	0.3 at 2300 F	1.0 at 2600 F	4.0 at 2800 F	0.8 at 3000 F
Reversible Thermal Expansion, percent..	0.5-0.6 at 2000 F	0.5-0.6 at 2000 F	0.5-0.6 at 2000 F	0.5-0.6 at 2000 F	0.5-0.6 at 2000 F	0.5-0.6 at 2000 F
Conductivity* at Mean Temperatures						
500 F.....	0.77	0.97	1.51	1.92	2.00	3.10
1000 F.....	1.02	1.22	1.91	2.22	2.50	3.20
1500 F.....	1.27	1.47	2.31	2.52	3.00	3.35
2000 F.....	—	1.72	2.70	2.82	3.50	3.60
Recommended Service						
Back up.....	2000 F	2000 F	2300 F	2600 F	2800 F	3000 F
Exposed.....	1600 F	2000 F	2300 F	2600 F	2800 F	3000 F

† 24-hr simulative service panel test for JM-3000; 24-hr soaking period for other brick.

* Conductivity is expressed in Btu in. per sq ft per F per hour at the designated mean temperatures.

Note: Above tests are in accordance with A.S.T.M. tentative standards.



Johns-Manville First in INSULATIONS

SHENANGO-PENN

Centrifugal
CASTINGS

... KEY TO SAVINGS



High Score

IN HIGH PRESSURE SERVICE

THE hydraulic cylinder pictured above gives 2-way assurance of exceptional life—despite repetitive pressures up to 3,000 psi.

Not only is it cast of tougher, stronger Meehanite Metal, but it's also a Shenango-Penn centrifugal casting. This in itself means a measurable gain in tensile strength... finer, pressure-dense grain... superior wear resistance... freedom from defects... and, very important in pressure work, avoidance of porosity. The net result is exceptional life, dependa-

ble performance, low-cost service.

Shenango-Penn centrifugal casting techniques, the result of specialization for years, offer decided advantages in symmetrical and annular parts of every description. They can be supplied in various metals, ferrous and non-ferrous... rough, semi or finish machined as you wish. You'll be time and money ahead.

SEND FOR FREE BULLETINS
SHENANGO-PENN MOLD COMPANY
587 West Third Street Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO P PENN

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL

NEW PRODUCTION IDEAS

Continued

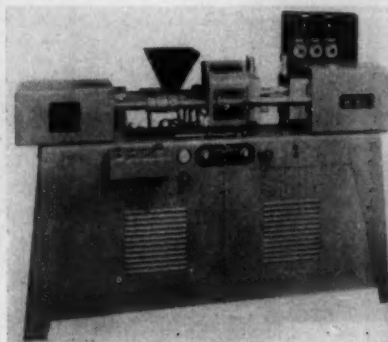
the base of the unit. The cleaned air with any toxic fumes is exhausted to the outdoors through the outlet at the top of the cyclone. *Aget-Detroit Co.*

For more data insert No. 31 on postcard, p. 31.

Plastics Injection Press

Semi-automatic; 2 oz capacity; molds thermoplastics including nylon.

For mass production of smaller plastic parts at low cost, a semi-automatic injection press has been developed. It is claimed that a job



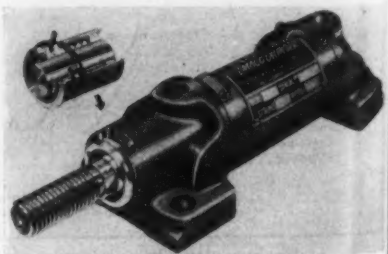
can be set up on the press by one man in 20 min. A pushbutton control box mounted near the operator assures maximum accessibility. Simplified controls provide ease in hand setup or semi-automatic use. Maximum mold size is 8x10 in.; casting area, 20 sq in. *Van Dorn Iron Works Co.*

For more data insert No. 32 on postcard, p. 31.

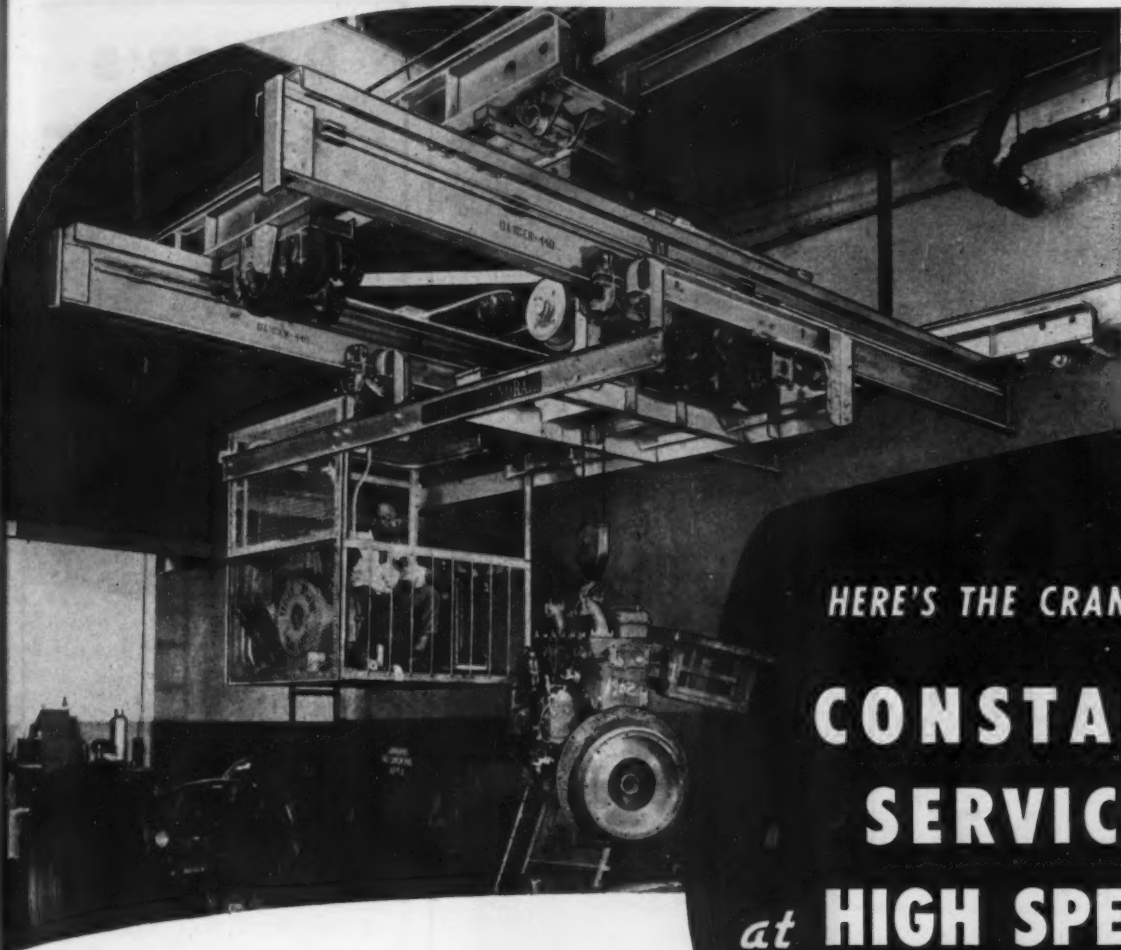
Cylinder Cartridge Gland

A self-contained packing gland for hydraulic and air cylinders.

Marketed under the name Pemaco E-Z-Pak gland, and com-



plying with JIC standards, the new gland combines bearing surface, a low friction ram seal, and a seal guard ram scraper into a single



HERE'S THE CRANE FOR
**CONSTANT
 SERVICE**
at **HIGH SPEED**

If your handling operations must be "on the go all the time and fast, too", then investigate this American MonoRail Crane.

Coupled with constant service at high speed, it offers the advantages of easy movement, rugged construction, low-cost operation and quick installation. But the No. 1 advantage is articulated trolleys. When each trolley wheel carries its share of the load in perfect alignment with the craneway tracks and all possible friction is eliminated, the result is perfectly articulated trolley travel. Applied to American MonoRail Cranes, these articulated trolleys permit operating speeds of 500 feet per minute and constant service. Breakdowns are practically eliminated and the crane is ready for fast service at all times.

An American MonoRail engineer will gladly give you all the details, or write us about the American MonoRail Constant-Service High-Speed Crane.

THE AMERICAN **MONORAIL** COMPANY

13103 ATHENS AVENUE

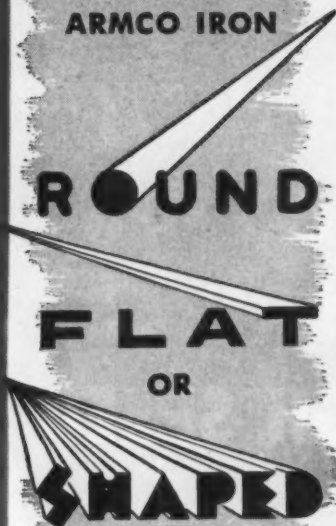
CLEVELAND 7, OHIO

December 14, 1950

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PAGE WIRE

LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON



You draw the Shape

—Page can draw the Wire—

—the way you want it for your production—whether it's ALL of your product, or only a part.

Cross-sectional areas up to .250" square; widths to 3/8"; width-to-thickness ratio not exceeding 6 to 1.

**for Wire or
Information about Wire—**

*Get in touch
with Page!*



PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

NEW PRODUCTION IDEAS

Continued

compact unit. No adjustment is necessary after installation. Replacement can be accomplished without dismantling the cylinder, and in most cases, without removing the cylinder from the machine. The cartridge gland is manufactured for both hydraulic and air cylinders. *Petch Mfg. Co.*

For more data insert No. 33 on postcard, p. 35.

Battery-Powered Tramper

1 1/2-ton, for mine-haulage work.

Small and compact, but powerful, the tramper is designed for use in metal mines where clearances are restricted. Available in any track gage between 18 and 24 in., the new unit is 71 1/2 in. long over



bumpers and 35 9/16 in. wide. Rated drawbar pull is 400 lb, with speed of 3 mph. A maximum drawbar pull on level tangent track is 750 lb. Any standard make of storage battery may be used for power supply. A folding cab permits loading in limited mine hoist cages. *General Electric Co.*

For more data insert No. 34 on postcard, p. 35.

Paint Heater

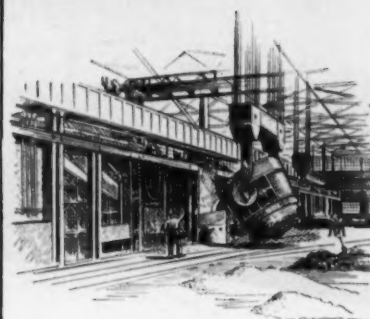
Supplies 24 to 28 gph hot paint to installations using spray guns.

A new double unit paint heater consists of two heating units mounted on a common base with a standard Bede circulating arrangement. The heater heats paint to 160°-200°F to reduce paint and solvent waste, increase the quality of the finish and reduce re-

BAKER'S MAGDOLITE

helps you produce

**BETTER
STEEL**



the original Dead-Burned
Dolomite Refractory is
5 WAYS BETTER

- more uniform ingots
- in greater numbers
- at lower fuel costs
- less defective material
- at appreciable savings

Prove these five points of superiority to your own satisfaction. Order a few cars of Baker's Magdolite, and see how maintenance and repair costs come down . . . in open hearth and electric furnace operations. The J. E. Baker Company, York, Pennsylvania.

Plants at Billmeyer, Pa.
and Millersville, Ohio.



jects. Constant circulation of the paint is provided to minimize temperature drop in paint lines to the spray guns. Paint can be drawn

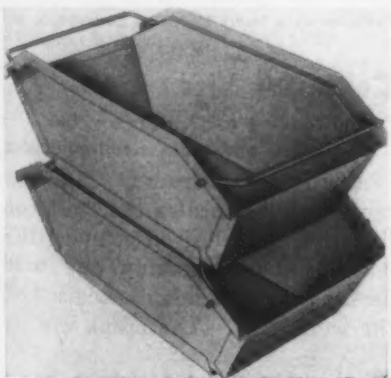


directly from the original paint container without the use of a pressure tank. *Bede Products, Inc.*
For more data insert No. 35 on postcard, p. 35.

Materials Handling Box

Permits rapid, efficient, economical supply of component parts to worker.

This functionally-designed parts box can be used by two workers as well as one, as parts are accessible from either end. Two or more units can be tiered, producing a compact, sturdy parts bin for loading at one end and withdrawing from the other. The standard



Nestier is $17\frac{1}{2} \times 9\frac{1}{4} \times 5\frac{1}{2}$ in. and constructed of 18-gage steel. Fifty-five units can be nested in a 5-ft stack. *United Carriers & Fabricators, Inc.*

For more data insert No. 36 on postcard, p. 35.

Air Line Respirator

Protects against dusts, fumes, vapors, mists, smokes, gases.

No filters or cartridges are needed for the air line respirator because a continuous flow of fresh



Battery of individually controlled Annealing Furnaces for heat treating Unitcastings.

UNITCAST Heat Treating Facilities MEET ALL PHYSICAL REQUIREMENTS

To meet Unitcast's standards, there is more than enough heat treating capacity to handle production. Because of Unitcast's and customer's requirements, these facilities are a necessity.

In heat treating, Unitcastings are grouped according to the grade of metal and thickness of cross section to assure meeting all physical requirements. And all Unitcastings are heat treated in this manner to insure better performance. Here's just one illustration of the many ways Unitcast's adequate plant facilities benefit you.

UNITCAST

QUALITY STEEL CASTINGS



Give us a chance to offer a "cast steel" answer for your parts problem. Our suggestions while your product is in the design stage will pay continuous dividends. Write or call today. Unitcast Corporation, Steel Casting Division, Toledo 9, Ohio. In Canada: Canadian-Unitcast Steel, Ltd., Sherbrooke, Quebec.

UNITCASTINGS ARE FOUNDRY ENGINEERED

December 14, 1950

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OUT OUR WAY



SPEEDY DELIVERY wherever you are **SOL-SPEEDI-DRI**

It's NO ACCIDENT that "Speedi" is Sol-Speedi-Dri's middle name. America's champion oil and grease absorbent is immediately available from warehouse stocks throughout the country. It's ready to assure you safe and skid-free floors by soaking up all fluids in short order. Sol-Speedi-Dri is laboratory-tested for consistent quality. Pound for pound, price for price, it's your best buy!

SPEEDI-DRI CORP., 710 W. Washington Sq., Philadelphia 5, Pa.



Warehouse stocks maintained in principal cities of the United States and Canada.

Headquarters in New York, New England and New Canada should write to Speedi-Dri Corp., Cleveland, Ohio, or to Speedi Petroleum Products Co., 1724 Chestnut St., Philadelphia 5, Pa.

FREE SAMPLE: Fill out the coupon and mail today for big, free sample.

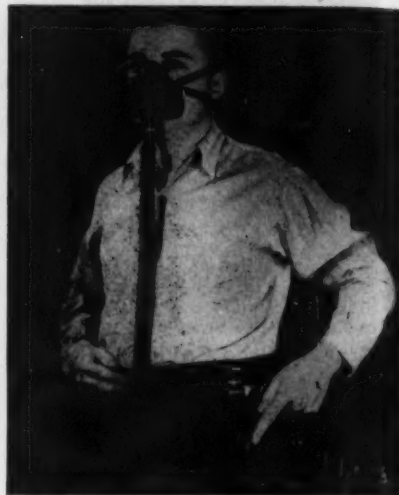
Name _____
Address _____
City _____ State _____

1A-1214-68

NEW PRODUCTION IDEAS

Continued

air is directed through the hose. Air flow to the facepiece is regulated by an adjustable valve clipped to the worker's belt or



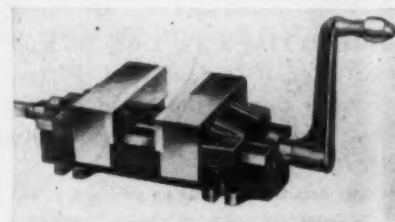
clothing. The valve locks in position and cannot be accidentally changed. A detachable hose coupling at the junction of breathing tube and supply hose automatically shuts off air supply when detached. The assembly operates at air line pressure between 9 and 25 psi. *American Optical Co.*

For more data insert No. 37 on postcard, p. 35.

Centering Vise

Fast loading and unloading; both jaws open and close simultaneously.

A rugged compactly designed centering vise locates the center of the work at a desired point on the machine table, making the unit useful where outside dimensions of the work vary. The crank can be



used on either end. Jaws are 6 in. wide, 1½ in. high, and open to 6¼ in. V jaws are available to center round work. *Graham Mfg. Co.*

For more data insert No. 38 on postcard, p. 35.

Resume Your Reading on Page 39

MARKET

IRON AGE
FOUNDED 1885
MARKETS & PRICES

Briefs and Bulletins

scrap escalator—A scrap escalator clause, an innovation in steel scrap pricing, has been announced by Copperweld Steel Corp. It will appear as a separate item on all invoices, and be based on a scrap maximum which Copperweld will absorb, of \$38 per gross ton, Warren, Ohio. "The basis of computation for billing purposes will be the average commitments deliverable to us on the first day of each month, adjusted to the nearest dollar," the company said. The customer will pay the difference between \$38 and the cost of scrap, if it exceeds \$38. Purpose of the clause is to protect Copperweld, which uses a 100 pct scrap charge, against a runaway market in scrap.

warehouse sentiment—Some warehouse people aren't satisfied with the present system of warehouse allocations. They believe that a controlled materials plan will be the only means of assuring them an adequate steel supply. As things stand now, allocations and DO orders cut down the amount of free steel left on which their percentages are based.

wildcats at Gary Works—The wildcat strike in the No. 2 openhearth shop at U. S. Steel Corp.'s Gary Works, which started on Dec. 2 is still in progress. Some 28,000 tons have been lost to date. Average daily loss is running around 3300 tons.

beehive coke—Price of Connellsville foundry beehive coke has advanced 50¢ per ton and is now quotable at \$17 to \$17.50. While some producers are asking higher prices for furnace beehive, the market generally is unchanged at \$14 to \$14.50.

shifting output—One steel producer has advised customers that production of blackplate will be cut out by the middle of next year so that production of tinplate can be increased. This is probably due to an increased demand for tinplate used in canning food.

nuts and bolts—Reflecting the increased cost of steel, nuts, bolts, rivets, and screws advanced approximately 10 pct in price effective Dec. 5.

silvery iron—Globe Iron Co. of Jackson, Ohio, has announced an increase of \$3 a ton for silvery iron, bringing the price to \$62.50 at Jackson.

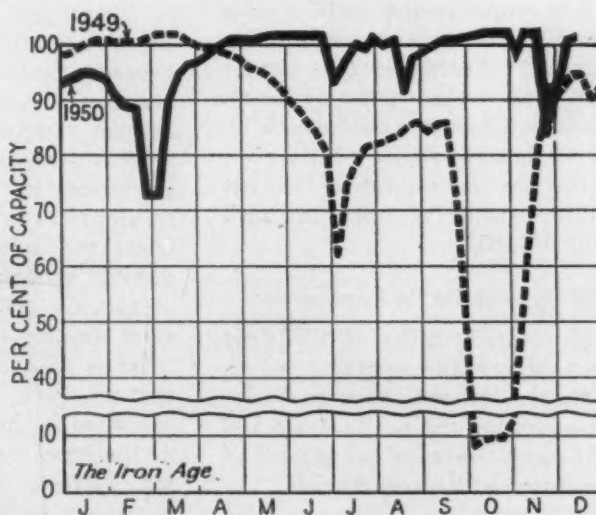
freight cars—Orders for freight cars may reach 150,000 to 200,000 during 1951. It is expected that these will offset car retirements and raise car ownership to 1,850,000 by the middle of 1953.

eastern coke prices—Last week both Alan Wood Steel Co. and Philadelphia Coke Co. increased prices on all grades of coke 60¢ per ton. New prices for foundry coke are \$22.60 per net ton f.o.b. Swedeland, Pa., and \$22.70 per net ton f.o.b. Philadelphia.

spiegeleisen boost—New Jersey Zinc Co. has increased all grades of spiegeleisen at Palmerton, Pa., \$5 a ton. Price for 16-19 pct Mn at Palmerton is \$74, and for 19-21 pct Mn, \$75. Carnegie-Illinois prices at Pittsburgh and Chicago, are now \$75 for 16-19 pct Mn and \$76 for 19-21 pct Mn.

ferroalloy prices—Electro Metallurgical Co. has price changes in several ferroalloy products. New prices are: Ferro-tungsten, \$2.75; calcium-silicon, carload lots, 19¢ per lb; calcium-manganese-silicon, carload lots, 20¢ per lb; CMSZ, ton lots, 20.75¢ per lb.

Steel Operations**



District Operating Rates—Per Cent of Capacity**

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Dec. 3	98.0*	100.0*	95.0*	98.0	104.5	104.0	101.0*	106.0	101.0	106.0	95.0	90.5	100.5	100.5
Dec. 10	100.0	104.0	95.5	98.0	104.5	104.0	98.0	106.0	101.0	104.0	67.0	90.5	103.5	101.5

* Revised.

** Steel operations for the first half of 1950 are based on annual capacity of 99,392,800 net tons. Beginning July 1, 1950, operations are based on new annual capacity of 100,563,500 net tons.

Nonferrous Metals OUTLOOK

Market Activities

New York—Producers and users of copper now have some recourse from the National Production Authority's order M-12 on copper consumption.

The Commerce Dept. now has on hand application forms for exemption or adjustment of this order. Order M-12 provides that any producer (under Form 11) or consumer (under Form 12) affected by any provision of the order may file on the grounds that: (1) His business operation was begun during or after the base period, (2) any provision of the order works an undue hardship on him not generally suffered by others in the same industry, or (3) enforcement against him would not be in the interest of national defense or in the public interest.

The copper import tariff is once again in the news. Representative James T. Patterson (R., Conn.) last week wrote a letter to Senate Finance Committee chairman Walter F. George (D., Ga.) calling for immediate consideration of the bill to suspend the copper tax until June 30, 1951.

Will Have to Be Re-introduced

He pointed out that if this is not done before the current session ends, the bill will have to be re-introduced at the next session and will again have to be passed by the House of Representatives.

Representative Patterson also indicated the paradoxical nature of the tax insofar as civilian consumption of copper has been restricted for next year and the metal is vital to the defense effort. Discrimination against Chile was also mentioned in the letter as being against our good neighbor policy.

Representative Patterson requests Senate consideration on copper tariff suspension . . . October aluminum output higher . . . NPA issues scrap copper restrictions.

Senator McFarland (D., Ariz.) has indicated that his stand against the suspension of the copper import tariff is unchanged and that he will continue to oppose the bill.

Domestic primary aluminum production during October totaled 125,830,495 lb, almost 6 pct ahead of the September output and about 2 million lb more than the third quarter average. Sheet and plate shipments during the month were 108,170,099 lb, according to the Aluminum Association. This total is somewhat under September shipments but it is some 3.5 million lb ahead of the third quarter average. Castings shipments were ahead of both September and third quarter averages.

Secondary brass and bronze ingot prices have not yet followed scrap prices in their nose-dive because the ingot makers are still getting material under contracts at the old prices. When they do start getting lower priced scrap, there is a chance that prices will not go down much because DO orders so far have hardly been felt by the ingot makers, and the civilian cutback order affects their customers' orders.

NPA early this week issued order M-16 which outlaws conversion of copper scrap without specific NPA approval. Inventories are also tightly restricted. (See page 130 for complete details of M-16.) It was anticipation of this order which caused copper and brass scrap prices to drop sharply last week.

Stocks Show Increase

November statistics released by the American Zinc Institute show only slight changes from the previous month. Production totaled 79,226 tons, off slightly from October, and shipments were 79,079 tons, also a slight reduction from October. Stocks at hand at the end of the month showed an increase of 147 tons to a total of 9255 tons.

Daily average production of the zinc smelters was 2640 tons, the highest daily average in several years.

Lead users will be asking for a higher tonnage of that metal in January than December. It is anticipated that less lead will be available and suppliers will have to cut their customers again next month.

NONFERROUS METALS PRICES

	Dec. 6	Dec. 7	Dec. 8	Dec. 9	Dec. 11	Dec. 12
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake, delivered ...	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York ...	\$1.42	\$1.40	\$1.41	....	\$1.40	\$1.43
Zinc, East St. Louis	17.50	17.50	17.50	17.50	17.50	17.50
Lead, St. Louis	16.80	16.80	16.80	16.80	16.80	16.80

Note: Quotations are going prices.

*Tentative.

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. fri. allowed)

Flat Sheet: 0.188 in., 28, 38, 30.1¢; 48, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 75S-O, 75S-OAL, 39.9¢; 0.081 in., 28, 38, 31.2¢; 48, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 34.1¢; 75S-O, 75S-OAL, 41.8¢; 0.32 in., 28, 38, 32.9¢; 48, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.

Plate: ¼ in. and heavier: 28, 38-F, 28.3¢; 48-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.8¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 28, 39.6¢ to 11.1¢; 36 to 38, 47.2¢ to 11.70.

Rod, Rolled: 1.5 to 4.5 in., 28-F, 38-F, 37.5¢ to 33.5¢; cold-finished, 0.375 to 3 in., 28-F, 38-F, 40.5¢ to 35¢.

Screw Machine Stock: Rounds, 11S-TS, ¼ to 11/32 in., 53.5¢ to 42¢; ½ to 1½ in., 41.5¢ to 39¢; 1 7/16 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 28, 39.5¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 42¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 75S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 63S-T6, OD in. 1¼ to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., \$1.142; 96 in., \$1.522; 120 in., \$1.902; 144 in., \$2.284. Gage 0.024 in. x 28 in., 72 in., \$1.379; 96 in., \$1.839; 120 in., \$2.299; 144 in., \$2.760. Coiled Sheet: 0.019 in. x 28 in., 28.2¢ per lb.; 0.024 in. x 28 in., 26.9¢ per lb.

Magnesium

(F.o.b. mill, freight allowed)

Sheet and Plate: FSI-O, ¼ in. 63¢; 3/16 in. 65¢; ¼ in. 67¢; B & S Gage 10, 68¢; 12, 72¢; 14, 78¢; 16, 85¢; 18, 93¢; 20, \$1.05; 22, \$1.27; 24, \$1.67. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 75.5¢; 1¼ to 1.749 in., 53¢; 2¼ to 5 in., 43.5¢. Other alloys higher. Base: Up to ¼ in. diam, 10,000 lb; ¼ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M, in weight per ft. for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft. of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ in. to 5/16, \$1.40; 5/16 to ¾, \$1.26; ¾ to 1, \$1.12; 1 to 2 in., 76¢; 0.165 to 0.219, ¾ to 1, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in. in. Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Titanium

(10,000 lb. base, f.o.b. mill)

Commercially pure and alloy grades: Sheet and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

Nickel and Monel

(Base prices, f.o.b. mill)

"A" Nickel Monel
Sheets, cold-rolled 69 53
Strip, cold-rolled 75 56
Rods and bars 65 51
Angles, hot-rolled 65 51
Plates 67 52
Seamless tubes 98 86
Shot and blocks 46 46

Copper, Brass, Bronze

(Freight prepaid on 200 lb includes duty)

	Sheets	Rods	Extruded Shapes
Copper	41.03		40.63
Copper, h-r		36.88	
Copper, drawn		38.18	
Low brass	39.15	38.84	
Yellow brass	38.28	37.97	
Red brass	40.14	39.83	
Naval brass	43.08	38.61	38.07
Landed brass		32.63	36.70
Comm'l bronze	41.13	40.82	
Mang. bronze	45.96	40.65	41.41
Phos. bronze	60.20	60.45	
Muntz metal	40.43	36.74	37.99
Ni silver, 10 pct	49.27	51.49	
Arch. bronze			35.11

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed 19.00
Aluminum pig 18.00
Antimony, American, Laredo, Tex. 32.00
Beryllium copper, 3.75-4.25% Be. \$1.56
Beryllium aluminum 5% Be, Dollars per lb contained Be \$69.00
Bismuth, ton lots \$2.25
Cadmium, del'd \$2.55
Cobalt, 97-99% (per lb) \$1.80 to \$1.87
Copper, electro, Conn. Valley 24.50
Copper, Lake, delivered 24.625
Gold, U. S. Treas., dollars per oz. \$35.00
Indium, 99.8%, dollars per troy oz. \$2.25
Iridium, dollars per troy oz. \$300
Lead, St. Louis 16.80
Lead, New York 17.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb 24.50
Magnesium, sticks, 100 to 500 lb 42.00 to 44.00
Mercury, dollars per 76-lb flask f.o.b. New York \$118 to \$125
Nickel, electro, f.o.b. New York 51.22
Nickel oxide sinter, f.o.b. Copper Cliff, Ont., contained nickel 44.25
Palladium, dollars per troy oz. \$24.00
Platinum, dollars per troy oz. \$90 to \$93
Silver, New York, cents per oz. 80.00
Tin, New York \$1.43
Titanium, sponge \$5.00
Zinc, East St. Louis 17.50
Zinc, New York 18.22
Zirconium copper, 50 pct \$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot
No. 115 29.00
No. 120 28.50
No. 123 28.00
80-10-10 ingot
No. 305 35.00
No. 315 32.00
88-10-2 ingot
No. 210 47.50
No. 215 44.50
No. 245 37.00
Yellow ingot
No. 405 25.50
Manganese bronze
No. 421 32.75

Aluminum Ingot

(Cents per lb, 30,000 lb lots)

95-5 aluminum-silicon alloys
0.30 copper, max. 33.75-34.25
0.60 copper, max. 33.50-34.00
Piston alloys (No. 122 type) 31.50-32.00
No. 12 alum. (No. 2 grade) 30.75-31.25
108 alloy 31.25-31.75
195 alloy 32.75-33.25
13 alloy 34.00-34.50
ASX-679 31.25-31.75

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 ¼% 32.50-33.00
Grade 2—92-95% 30.75-31.50
Grade 3—90-92% 30.00-30.50
Grade 4—85-90% 29.50-30.00

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper
Cast, oval, 15 in. or longer 39 ½
Electrodeposited 33 ½
Rolled, oval, straight, delivered 38 ½
Forged ball anodes 43
Brass, 80-20
Cast, oval, 15 in. or longer 34 ½
Zinc, oval 26 ½
Ball anodes 25 ½
Nickel 99 pct plus
Cast 68.00
Rolled, depolarized 69.00
Cadmium \$2.80
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn. 79 ½

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum 52.15
Copper sulfate, 99.5 crystals, bbl. 12.85
Nickel salts, single or double, 4-100 lb bags, frt allowed 20 ½
Nickel chloride, 375 lb drum 27 ½
Silver cyanide, 100 oz lots, per oz 67 ½
Sodium cyanide, 96 pct domestic 200 lb drums 19.25
Zinc cyanide, 100 lb drums 45.85

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add ¼¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turn-ings
Copper	23	22 ½
Yellow brass	20 ½	18 ½
Red brass	21 ½	20 ½
Comm. bronze	21 ½	21
Mang. bronze	19 ½	18 ½
Brass rod ends	19 ½	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire 21.00
No. 2 copper wire 20.00
Light copper 19.00
Refinery brass 18.50*
Radiators 15.00
*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire 21.00
No. 2 copper wire 20.00
Light copper 19.00
No. 1 composition 20.00
No. 1 comp. turnings 19.75
Rolled brass 16.50
Brass pipe 18.50
Radiators 15.25
Heavy yellow brass 15.00

Aluminum

Mixed old cast 20
Mixed old clips 21
Mixed turnings, dry 19 ½
Pots and pans 20
Low copper 22 ½

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire. 19 ½—20
No. 2 heavy copper and wire. 18 —18 ½
Light copper 17 —17 ½
New type shell cuttings 17 —17 ½
Auto radiators (unsweated) 12 ½—13
No. 1 composition 16 ½—16 ½
No. 1 composition turnings 15 ½—16
Clean red car boxes 14 ½—14 ½
Cocks and faucets 14 ½—14 ½
Mixed heavy yellow brass 11 —11 ½
Old rolled brass 12 ½—13
Brass pipe 15 ½—15 ½
New soft brass clippings 16 —16 ½
Brass rod ends 15 —15 ½
No. 1 brass rod turnings 14 ½—15

Aluminum

Alum. pistons and struts 12 ½—13
Aluminum crankcases 15 ½—16
2S aluminum clippings 19 —19 ½
Old sheet and utensils 15 ½—16
Borings and turnings 13
Misc. cast aluminum 15 ½—16
Dural clips (24S) 15 ½—16

Zinc

New zinc clippings 14 ½—15
Old zinc 11 —11 ½
Zinc routings 8 ½—9
Old die cast scrap 8 —8 ½

Nickel and Monel

Pure nickel clippings 60 —65
Clean nickel turnings 57 —60
Nickel anodes 60 —65
Nickel rod ends 60 —65
New Monel Clippings 22 —25
Clean Monel turnings 18 —20
Old sheet Monel 20 —22
Inconel clippings 26 —28
Nickel silver clippings, mixed 13 —14
Nickel silver turnings, mixed 12 —13

Lead

Soft scrap, lead 14 ½—14 ½
Battery plates (dry) 18 ½—9

Magnesium

Segregated solids 9 —10
Castings 5 ½—6 ½

Miscellaneous

Block tin 85 —90
No. 1 pewter 63 —65
No. 1 auto babbitt 58 —60
Mixed common babbitt 12 ½—12 ½
Solder joints 18 ½—19
Siphon tops 58 —60
Small foundry type 16 ½—16 ½
Monotype 14 ½—15
Lino. and stereotype 14 ½—14 ½
Electrotype 12 ½—13
Hand picked type shells 11 ½—11 ½
Lino. and stereo. dross 8 —8 ½
Electro. dross 6 ½—6 ½

MARKETS—PRICES—TRENDS



SCRAP

Iron & Steel

Formula Lid-Lifting Eases Scrap Pressure

Some of the steam that had been building up to a good head in scrap centers could be heard hissing away this week with last week's formula lid-lifting. Formula price bounds of from \$2.50 to \$6 for No. 1 heavy sent THE IRON AGE's scrap composite to a record high of \$45.08.

Unquestionably, the trade was much happier with the price rises but still a mutter could be heard. Some were wondering if the increases were enough. In Pittsburgh, reports of upgrading are already being heard. Detroit's gap between formula and free market scrap was narrowed, not closed.

Substantial tonnages of steel mill grades were moving in Cleveland and in the Valley and reportedly brokers were satisfied. It was expected that some upgrading will continue. Some judged formula increases as not enough but that they had taken the edge off any reluctance to sell. Birmingham mills refused to meet the new formula. Their area was raided.

PITTSBURGH—General reaction to the new price formula was "same old confusion at a higher level." With higher prices in effect less than a week, reports of upgrading are already being heard. On

No. 2 bundles, an all-black bundle is bringing \$44.50, the formula for No. 2 heavy melting; the bundle formula of \$43.50 applies if the bundle contains galvanized. Apart from the mills' desire to compensate fabricators for higher finished steel prices, there is some thought here that the increase in the formula was in anticipation of possible government price controls. Machine shop and short turnings were up \$2.50 on the formula. Low Phos, railroad grades, and cast also rose.

CHICAGO—Scrap price increases were confirmed in the Chicago market last week. A major consumer came into the market for No. 1 heavy melting steel at \$45 per gross ton, No. 2 heavy melting at \$43, No. 2 dealers bundles at \$42, and short shoveling turnings at \$39. Some consumers are applying the new increases to unfilled old orders taken at the previous formula price. No. 1 heavy melting steel is still difficult to pick up at the new price. Low Phos and cast grades continued strong with some increases noted.

PHILADELPHIA—Big news this week is the increase in formula prices. The increase in this district was greater than expected and dealers and brokers are well satisfied with the new formula. No. 1 heavy melting and No. 1 bundles are up \$6, No. 2 heavy is up \$7, and No. 2 bundles registered at \$10 leap to a high of \$42 per gross ton. Blast furnace grades are \$2 to \$5 stronger this week and low phos is practically unchanged. Some of the cast grades also moved higher.

NEW YORK—Formula price increases on steelmaking grades may make collections larger. As one source put it: "There's no reason to hold back on scrap now." Big question is: How much scrap

was being held back anyway? New formula prices are: No. 1, \$39.09; 2, \$37.09, No. 2 bundles, \$36.09. Cast grades were showing strength and were due for increases later this week.

DETROIT—Increases in the so-called scrap formula last week of as much as \$5.25 on electric furnace grades and \$2.75 on openhearth have narrowed but have not closed the gap between directed and free market scrap at Detroit. THE IRON AGE is continuing, therefore, the practice of showing both the formula price and a representative quotation for buying the same scrap grade in the open market. The formula is shown first. Under the new formula price structure \$2.50 more will be paid for the same grade of steel going to electric furnace plants. Meanwhile, the demand for scrap remains strong here and reports are increasing that government price controls are coming.

CLEVELAND—Substantial tonnages of steel mill grades are moving at the new formula prices here and in the Valley. Qualitatively, a lot of this tonnage leaves something to be desired, and some upgrading will probably continue. Some mills will probably not pay springboards on No. 2 bundles. Based on comments heard in the trade, the new formula is going to stick. The trade is satisfied.

ST. LOUIS—Two of the leading consumers in the St. Louis industrial district came into the market for sizable tonnages at the formula for delivery within the next 30 days. The movement of scrap has been slowed by cold weather in the producing territory. Some foundry grades are up from \$1 to \$2.

CINCINNATI—Scrap is being traded freely at new formula prices in a strong and demanding market here. District consumers are trying to build inventory but weather and high water are hampering scrap handling and shipments to some extent. Foundry grades are very strong. Quotations for steel mill grades are based on the formula less \$1 for switching and 75¢ for brokers' commission. Formula price for No. 1 heavy melting is \$46.

BOSTON—New formula prices hit this market on all cylinders. No. 1 heavy melting climbed from \$32.50 to \$35 but dealers were getting \$36 before the new increases. The market is very active. No. 2 heavy went to \$33.67 and No. 1 bundles to \$35. Other scrap showed increases of up to \$2.50.

BIRMINGHAM—The scrap market here is in a state of confusion and no scrap was bought or sold here this week of any consequence. Steel mills here are refusing to raise prices and pay the formula, while those in the North are doing so and drawing scrap from this district. Dealers and brokers say they cannot compete with northern buyers unless they can get a higher price.

BUFFALO—New business aggregating about 25,000 tons was placed by one of the leading mill consumers following the upward revision in the scrap market pricing formula. Price gains throughout the list ranged from \$1 to \$5.75 a ton. No. 1 heavy melting advanced \$3.25; No. 2 heavy melting, \$4.75; No. 1 bundles, \$4.25; No. 2 bundles, \$5.75.



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when stainless is the question

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Iron and Steel

SCRAP PRICES

Going prices as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	\$46.00 to \$46.50
No. 2 hvy. melting	44.00 to 44.50
No. 1 bundles	46.00 to 46.50
No. 2 bundles	43.00 to 43.50
Machine shop turn.	38.00 to 38.50
Mixed bor. and ms. turns.	38.00 to 38.50
Shoveling turnings	40.00 to 40.50
Cast iron borings	39.00 to 39.50
Low phos. plate	56.00 to 56.50
Heavy turnings	46.50 to 47.00
No. 1 RR. hvy. melting	45.75 to 46.50
Scrap rails, random lgth.	64.50 to 65.00
Rails 2 ft and under	68.00 to 69.00
RR. steel wheels	63.00 to 64.00
RR. spring steel	63.00 to 64.00
RR. couplers and knuckles	63.00 to 64.00
No. 1 machinery cast	66.50 to 67.00
Mixed yard cast	57.50 to 58.00
Heavy breakable cast	52.50 to 53.00
Malleable	71.00 to 72.00

Chicago

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 factory bundles	44.00 to 45.00
No. 1 dealers' bundles	44.00 to 45.00
No. 2 dealers' bundles	41.00 to 42.00
Machine shop turn.	36.00 to 37.00
Mixed bor. and turn.	36.00 to 37.00
Shoveling turnings	38.00 to 39.00
Cast iron borings	38.00 to 39.00
Low phos. forge crops	55.00 to 57.00
Low phos. plate	52.00 to 55.00
No. 1 RR. hvy. melting	47.00 to 48.00
Scrap rails, random lgth.	62.00 to 63.00
Rerolling rails	65.50 to 66.50
Rails 2 ft and under	67.00 to 69.00
Locomotive tires, cut	58.00 to 59.00
Cut bolsters & side frames	54.00 to 55.00
Angles and splice bars	63.00 to 64.00
RR. steel car axles	100.00 to 105.00
RR. couplers and knuckles	58.00 to 59.00
No. 1 machinery cast	64.00 to 66.00
No. 1 agricul. cast	61.00 to 62.00
Heavy breakable cast	54.00 to 55.00
RR. grate bars	48.00 to 49.00
Cast iron brake shoes	52.00 to 53.00
Cast iron car wheels	58.00 to 59.00
Malleable	72.00 to 75.00

Philadelphia

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 bundles	44.00 to 45.00
No. 2 bundles	41.00 to 42.00
Machine shop turn.	31.00 to 32.00
Mixed bor. and turn.	31.00 to 32.00
Shoveling turnings	36.00 to 37.00
Low phos. punchings, plate	49.00 to 50.00
Low phos. 5 ft and under	49.00 to 50.00
Low phos. bundles	47.00 to 48.00
Hvy. axle forge turn.	44.00 to 45.00
Clean cast chem. borings	41.00 to 42.00
RR. steel wheels	53.00 to 54.00
RR. spring steel	53.00 to 54.00
Rails 18 in. and under	66.00 to 67.00
No. 1 machinery cast	59.00 to 60.00
Mixed yard cast	49.00 to 51.00
Heavy breakable cast	50.00 to 51.00
Cast iron carwheels	67.00 to 68.00
Malleable	69.00 to 70.00

Cleveland

No. 1 hvy. melting	\$45.25 to \$46.00
No. 2 hvy. melting	43.25 to 44.00
No. 1 busheling	45.25 to 46.00
No. 1 bundles	45.25 to 46.00
No. 2 bundles	42.25 to 43.00
Machine shop turn.	37.25 to 38.00
Mixed bor. and turn.	39.25 to 40.00
Shoveling turnings	39.25 to 40.00
Cast iron borings	39.25 to 40.00
Low phos. 2 ft and under	47.75 to 48.50
Steel axle turn.	44.25 to 45.00
Drop forge flashings	45.25 to 46.00
No. 1 RR. hvy. melting	46.00 to 46.50
Rails 3 ft and under	70.00 to 71.00
Rails 18 in. and under	72.00 to 73.00
No. 1 machinery cast	67.00 to 68.00
RR. cast	69.00 to 70.00
RR. grate bars	49.00 to 50.00
Stove plate	54.00 to 55.00
Malleable	73.00 to 74.00

Youngstown

No. 1 hvy. melting	\$45.75 to \$46.50
No. 2 hvy. melting	43.75 to 44.50
No. 1 bundles	45.75 to 46.50

No. 2 bundles	\$42.75 to \$43.00
Machine shop turn	37.75 to 38.50
Shoveling turnings	39.75 to 40.50
Cast iron borings	39.75 to 40.50
Low phos. plate	48.25 to 49.00

Buffalo

No. 1 hvy. melting	\$44.50 to \$45.25
No. 2 hvy. melting	42.50 to 43.25
No. 1 busheling	42.50 to 43.25
No. 1 bundles	43.50 to 44.25
No. 2 bundles	41.50 to 42.25
Machine shop turn.	36.50 to 37.25
Mixed bor. and turn.	36.50 to 37.25
Shoveling turnings	38.50 to 39.25
Cast iron borings	36.50 to 37.25
Low phos. plate	48.25 to 49.00
Scrap rails, random lgth.	55.00 to 56.00
Rails 2 ft and under	60.00 to 61.00
RR. steel wheels	60.00 to 61.00
RR. spring steel	60.00 to 61.00
RR. couplers and knuckles	60.00 to 61.00
No. 1 machinery cast	55.00 to 56.00
No. 1 cupola cast	52.00 to 53.00
Small indus. malleable	60.00 to 61.00

Birmingham

No. 1 hvy. melting	\$39.00 to \$40.00
No. 2 hvy. melting	35.00 to 36.00
No. 2 bundles	33.00 to 34.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	31.00 to 32.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	27.00 to 28.00
Bar crops and plate	46.00 to 47.00
Structural and plate	46.00 to 47.00
No. 1 RR. hvy. melting	43.00 to 44.00
Scrap rails, random lgth.	58.00 to 59.00
Rerolling rails	61.00 to 62.00
Rails 2 ft and under	66.00 to 67.00
Angles & splice bars	59.00 to 60.00
Std. steel axles	61.00 to 62.00
No. 1 cupola cast	59.00 to 60.00
Stove plate	54.00 to 55.00
Cast iron carwheels	46.00 to 47.00

St. Louis

No. 1 hvy. melting	\$45.00 to \$47.00
No. 2 hvy. melting	40.00 to 41.00
No. 2 bundled sheets	39.00 to 40.00
Machine shop turn.	28.50 to 29.50
Shoveling turnings	35.00 to 36.00
Rails, random lengths	58.00 to 59.00
Rails 3 ft and under	63.00 to 65.00
Locomotive tires, uncut	54.00 to 55.00
Angles and splice bars	62.00 to 64.00
Std. steel car axles	90.00 to 95.00
RR. spring steel	56.00 to 57.00
No. 1 machinery cast	63.00 to 65.00
Hvy. breakable cast	53.00 to 55.00
Cast iron brake shoes	50.00 to 52.00
Stove plate	49.00 to 50.00
Cast iron car wheels	62.00 to 64.00
Malleable	70.00 to 72.00

New York

Brokers' Buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$39.00
No. 2 hvy. melting	37.00
No. 2 bundles	36.00
Machine shop turn.	31.00
Mixed bor. and turn.	31.00
Shoveling turnings	33.00
Clean cast chem. bor.	\$36.00 to 37.00
No. 1 machinery cast	48.00 to 49.00
Mixed yard cast	43.00 to 44.00
Charging box cast	43.00 to 44.00
Heavy breakable cast	43.00 to 44.00
Unstrp. motor blocks	38.00 to 39.00

Boston

Brokers' Buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$35.00
No. 2 hvy. melting	33.67
No. 1 bundles	35.00

No. 2 bundles	\$32.67
Machine shop turn.	27.00
Mixed bor. and turn.	26.50
Shoveling turnings	29.00
No. 1 busheling	34.92
Clean cast chem. borings	\$31.00 to 32.00
No. 1 machinery cast	47.00 to 48.00
Mixed cupola cast	44.00 to 45.00
Heavy breakable cast	41.00 to 42.00
Stove plate	42.00 to 43.00

Detroit

Brokers' Buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$40.25 to \$41.50
No. 2 hvy. melting	38.25 to 38.75
No. 1 bundles	40.25 to 46.00
New busheling	40.25 to 45.00
Flashings	40.25 to 41.50
Machine shop turn.	32.25 to 32.75
Mixed bor. and turn.	32.25 to 32.75
Shoveling turnings	34.25 to 34.75
Cast iron borings	34.25 to 34.75
Low phos. plate	42.75 to 46.00
No. 1 cupola cast	58.00 to 60.00
Heavy breakable cast	49.00 to 51.00
Stove plate	48.00 to 50.00
Automotive cast	62.00 to 64.00

Cincinnati

Per gross ton, f.o.b. cars:	
No. 1 hvy. melting	\$44.25
No. 2 hvy. melting	42.25
No. 1 bundles	44.25
No. 2 bundles, black	42.25
No. 2 bundles, mixed	41.25
Machine shop turn.	35.00
Mixed bor. and turn.	34.00
Shoveling turnings	34.00
Cast iron borings	34.00
Low phos.-steel	46.75
Low phos. 18 in. under	62.00
Rails, random lengths	\$62.00 to 63.00
Rails, 18 in. and under	72.00 to 73.00
No. 1 cupola cast	65.00 to 66.00
Hvy. breakable cast	59.00 to 60.00
Drop broken cast	71.00 to 72.00

San Francisco

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	28.00
No. 1 bundles	30.00
No. 2 bundles	28.00
No. 3 bundles	25.00
Machine shop turn.	16.00
Elec. fur. 1 ft and under	\$40.00 to 42.50
No. 1 RR. hvy. melting	30.00
Scrap rails random lgth.	30.00
No. 1 cupola cast	43.00 to 46.00

Los Angeles

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	28.00
No. 1 bundles	30.00
No. 2 bundles	28.00
No. 3 bundles	25.00
Mach. shop turn.	16.00
Elec. fur. 1 ft and under	\$42.00 to 45.00
No. 1 RR. hvy. melting	30.00
Scrap rails, random lgth.	30.00
No. 1 cupola cast	52.00

Seattle

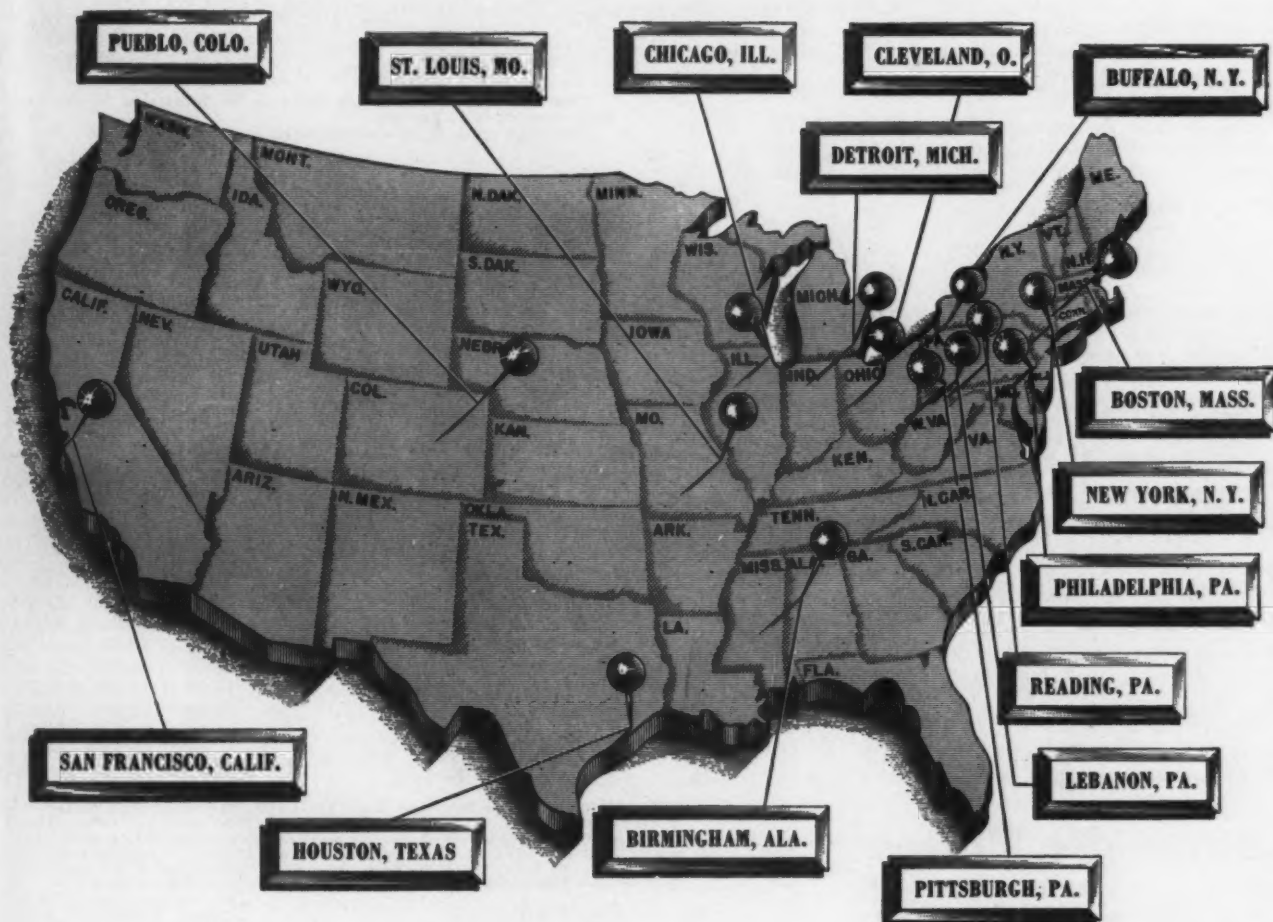
No. 1 hvy. melting	\$28.00
No. 2 hvy. melting	28.00
No. 1 bundles	22.00
No. 2 bundles	22.00
No. 3 bundles	18.00
Elec. fur. 1 ft and under	\$40.00 to 45.00
RR. hvy. melting	29.00
No. 1 cupola cast	45.00

Hamilton, Ont.

No. 1 hvy. melting	\$30.00
No. 1 bundles	30.00
No. 2 bundles	29.50
Mechanical bundles	28.00
Mixed steel scrap	26.00
Mixed bor. and turn.	23.00
Rails, remelting	30.00
Rails, rerolling	32.00
Bushelings	24.50
Bush., new fact. prep'd.	29.00
Bush., new fact. unprep'd.	23.00
Short steel turnings	23.00
Cast scrap	45.00

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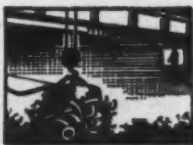
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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

December 14, 1950

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Comparison of Prices

Steel prices in this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel:	Dec. 12, 1950	Dec. 5, 1950	Nov. 14, 1949	Dec. 13, 1949
(cents per pound)	1950	1950	1950	1949
Hot-rolled sheets	3.60	3.60	3.35	3.25
Cold-rolled sheets	4.35	4.35	4.10	4.00
Galvanized sheets (10 ga)	4.80	4.80	4.40	4.40
Hot-rolled strip	3.50	3.50	3.25	3.25
Cold-rolled strip	4.75	4.75	4.21	4.038
Plate	3.70	3.70	3.50	3.40
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R-strip (No. 302)	36.50	36.50	34.50	33.00

Tin and Terneplate:

(dollars per base box)				
Tinplate (1.50 lb) cokes	\$7.50	\$7.50	\$7.50	\$7.75
Tinplate, electro (0.50 lb)	6.60	6.60	6.60	6.70
Special coated mfg. ternes	6.35	6.35	6.35	6.65

Bars and Shapes:

(cents per pound)				
Merchant bars	3.70	3.70	3.45	3.35
Cold finished bars	4.55	4.55	4.15	3.995
Alloy bars	4.30	4.30	3.95	3.75
Structural shapes	3.65	3.65	3.40	3.25
Stainless bars (No. 302)	31.25	31.25	30.00	28.50
Wrought iron bars	9.50	9.50	9.50	9.50

Wire:

(cents per pound)				
Bright wire	4.85	4.85	4.50	4.15

Rails:

(dollars per 100 lb)				
Heavy rails	\$3.60	\$3.60	\$3.40	\$3.20
Light rails	4.00	4.00	3.75	3.55

Semifinished Steel:

(dollars per net ton)				
Rerolling billets	\$56.00	\$56.00	\$54.00	\$52.00
Slabs, rerolling	56.00	56.00	54.00	52.00
Forging billets	66.00	66.00	63.00	61.00
Alloy blooms billets, slabs	70.00	70.00	66.00	63.00

Wire Rod and Skelp:

(cents per pound)				
Wire rods	4.10	4.10	3.85	3.40
Skelp	3.35	3.35	3.15	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*

Pig Iron:	Dec. 12, 1950	Dec. 5, 1950	Nov. 14, 1949	Dec. 13, 1949
(per gross ton)	1950	1950	1950	1949
No. 2, foundry, del'd Phila.	\$57.77	\$56.27	\$54.77	\$50.42
No. 2, Valley furnace	52.50	51.00	49.50	46.50
No. 2, Southern Cin'ti	55.58	55.58	52.58	46.08
No. 2, Birmingham	48.88	48.88	45.88	39.38
No. 2, foundry, Chicago†	52.50	52.50	49.50	46.50
Basic del'd Philadelphia	56.92	55.42	53.92	49.92
Basic, Valley furnace	52.00	50.50	49.00	46.00
Malleable, Chicago†	52.50	52.50	49.50	46.50
Malleable, Valley	52.50	52.50	49.50	46.50
Charcoal, Chicago	70.56	70.56	70.56	68.56
Ferromanganese†	181.20	181.20	178.60	173.40

†The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy page.

Scrap:

(per gross ton)				
Heavy melt'g steel, P'gh.	\$46.25	\$43.75	\$43.75	\$30.75
Heavy melt'g steel, Phila.	44.50	38.75	38.75	24.50
Heavy melt'g steel, Ch'go	44.50	39.75	39.75	26.50
No. 1 hy. com. sh't, Det.	43.13	41.25	39.75	26.50
Low phos. Young'n	48.63	46.25	46.25	32.75
No. 1 cast, Pittsburgh	66.75	62.75	60.75	39.50
No. 1 cast, Philadelphia	59.50	56.50	55.50	38.00
No. 1 cast, Chicago	65.00	63.00	60.50	39.50

Coke: Connellsville:

(per net ton at oven)				
Furnace coke, prompt	\$14.25	\$14.25	\$14.25	\$14.00
Foundry coke, prompt	17.25	16.75	16.75	15.75

Nonferrous Metals:

(cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	18.50
Copper, Lake, Conn.	24.625	24.625	24.625	18.625
Tin Straits, New York	\$1.43†	\$1.395*	\$1.375	79.00
Zinc, East St. Louis	17.50	17.50	17.50	9.75
Lead, St. Louis	16.80	16.80	16.80	11.80
Aluminum, virgin	19.00	19.00	19.00	17.00
Nickel, electrolytic	51.22	51.22	51.22	42.97
Magnesium, ingot	24.50	24.50	24.50	20.50
Antimony, Laredo, Tex.	32.00	32.00	32.00	32.00

†Tentative. *Revised.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1941 to 1944 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 130 of May 12, 1949, issue.)

Composite Prices

Finished Steel Base Price

Dec. 12, 1950	4.131¢ per lb.
One week ago	4.131¢ per lb.
One month ago	3.837¢ per lb.
One year ago	3.705¢ per lb.

	High	Low
1950....	4.131¢ Dec. 1	3.837¢ Jan. 3
1949....	3.837¢ Dec. 27	3.3705¢ May 3
1948....	3.721¢ July 27	3.193¢ Jan. 1
1947....	3.193¢ July 29	2.848¢ Jan. 1
1946....	2.848¢ Dec. 31	2.464¢ Jan. 1
1945....	2.464¢ May 29	2.396¢ Jan. 1
1944....	2.396¢	2.396¢
1943....	2.396¢	2.396¢
1942....	2.396¢	2.396¢
1941....	2.396¢	2.396¢
1940....	2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939....	2.35367¢ Jan. 3	2.26689¢ May 16
1938....	2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937....	2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936....	2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935....	2.07542¢ Oct. 1	2.06492¢ Jan. 8
1932....	1.89196¢ July 5	1.83910¢ Mar. 1
1929....	2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Pig Iron

.....\$52.69 per gross ton....
..... 51.94 per gross ton....
..... 49.69 per gross ton....
..... 45.88 per gross ton....

High	Low
\$52.69 Dec. 12	\$45.88 Jan. 3
46.87 Jan. 18	45.88 Sept. 6
46.91 Oct. 12	39.58 Jan. 6
37.98 Dec. 30	30.14 Jan. 7
30.14 Dec. 10	25.37 Jan. 1
25.37 Oct. 23	23.61 Jan. 2
\$23.61	\$23.61
23.61	23.61
23.61	23.61
\$23.61 Mar. 20	\$23.45 Jan. 2
23.45 Dec. 23	22.61 Jan. 2
22.61 Sept. 19	20.61 Sept. 12
23.25 June 21	19.61 July 6
32.25 Mar. 9	20.25 Feb. 16
19.74 Nov. 24	18.73 Aug. 11
18.84 Nov. 5	17.83 May 14
14.81 Jan. 5	13.56 Dec. 6
18.71 May 14	18.21 Dec. 17

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel

.....\$45.08 per gross ton....
..... 40.75 per gross ton....
..... 40.75 per gross ton....
..... 27.25 per gross ton....

High		Low	
\$45.08	Dec. 12	\$26.25	Jan. 3
43.00	Jan. 4	19.33	June 28
43.16	July 27	39.75	Mar. 9
42.58	Oct. 28	29.50	May 20
31.17	Dec. 24	19.17	Jan. 1
19.17	Jan. 2	18.92	May 22
19.17	Jan. 11	15.76	Oct. 24
\$19.17		\$19.17	
19.17		19.17	
\$22.00	Jan. 7	\$19.17	Apr. 10
21.83	Dec. 30	16.04	Apr. 9
22.50	Oct. 3	14.08	May 16
15.00	Nov. 22	11.00	June 7
21.92	Mar. 30	12.67	June 9
17.75	Dec. 21	12.67	June 8
13.42	Dec. 10	10.33	Apr. 29
8.50	Jan. 12	6.43	July 5
17.58	Jan. 29	14.08	Dec. 8

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.



Indications brought out by Magnaglo, glow under black light to clearly disclose a non-visible crack in car axle at wheel fit.



Magnaglo brings out a fluorescent indication, to locate typical crack in pinion gear of railroad diesel drive.



Zyglo brilliantly reveals cracks and poor bonding in these cutting tools. This method, like others employed with Magnaflux equipment is non-destructive and fast.

DEPEND ON MAGNAFLUX*

for Fast, Accurate,

**Non-Destructive Testing of
Metals, Non-Ferrous Materials
and Ceramics**



Luminous pattern by Magnaglo outlines forging crack in connecting rods shown above. Visual inspection would have missed this defect.

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MAGNAFLUX* TO

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MAGNETIC METAL PRODUCTS

Use Magnaflux equipment to inspect welded, cast, forged, or rolled parts—Magnaglo where bright fluorescent indications speed inspection.

ULTRASONIC TESTING

Use Magnaflux-Sonizon for thickness measurement and location of defects.

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Use Statiflux for testing glass and glazed products. Use Partek on porous or unfired materials.

NON-MAGNETIC METALS

Use Zyglo to establish quality control on the production line or during overhaul.

STRESS ANALYSIS

Use Stresscoat where entire parts are tested for strain distribution under load or in use.

PLASTICS TESTING

Use Zyglo to find non-visible cracks that contribute weakness.

RAILROAD CARS, DIESELS and STEAM

Use Magnaflux-Magnaglo or Zyglo for checking every critical part.

ENGINEERED INSPECTION INSTALLATIONS

Available for testing at production line speeds.

Magnaflux* equipment in a great variety of applications, shows up defects in a wide variety of materials. Whether cracks are caused by heat, fatigue, or corrosion, Magnaflux* locates and defines each defect clearly and in its entirety...at lowest cost and at production line speed. The result is immediately visible. Write for detailed information on your specific inspection problem.

WRITE FOR DETAILED INFORMATION ON YOUR SPECIFIC INSPECTION PROBLEM

* Magnaflux, Magnaglo, Zyglo: trademarks (Reg. U.S. Pat. Off.) of the Magnaflux Corporation applied to equipment and materials for use with magnetic particle and fluorescent penetrant inspection methods.



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IRON AGE STEEL PRICES	Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page. Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.													
	Pittsburgh	Chicago	Gary	Cleveland	Canton Mass-	Middle- town	Youngs- town	Bethle- hem	Buffalo	Censho- hecken	Johns- town	Spar- rows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	\$82.00 ¹													
Alloy, net ton	\$84.00 ¹⁻¹⁷													\$84.00 ⁹¹
BILLETS, BLOOMS, SLABS Carbon, re-rolling, net ton	\$68.00 ¹⁻⁵	\$66.00 ¹	\$68.00 ¹						\$68.00 ³		\$68.00 ³			
Carbon forging billets, net ton	\$68.00 ¹⁻⁵	\$68.00 ¹⁻⁴	\$68.00 ¹	\$68.00 ⁴	\$68.00 ⁴				\$68.00 ³⁻⁴	\$73.00 ³⁰	\$68.00 ³			\$69.00 ¹¹
Alloy, net ton	\$70.00 ¹⁻¹⁷	\$70.00 ¹⁻⁴	\$70.00 ¹		\$70.00 ⁴			\$70.00 ³	\$70.00 ³⁻⁴	\$77.00 ³⁰	\$70.00 ³			\$73.00 ¹¹
PIPE SKELP	3.35 ¹ 3.45 ²						3.35 ¹⁻⁴							
WIRE RODS	4.10 ² 4.30 ¹⁵	4.10 ²⁻⁴⁻³³	4.10 ⁴	4.10 ²			4.10 ⁶				4.10 ³	4.20 ¹		
SHEETS Hot-rolled (18 ga. & hvr.)	3.80 ¹⁻⁵⁻⁹⁻¹⁰ 3.75 ²⁸	3.8(9-23)	3.80 ¹⁻⁶⁻⁹	3.80 ⁴		3.80 ⁷	3.80 ¹⁻⁴⁻⁶ 4.00 ¹³		3.80 ³	4.00 ²⁰		3.80 ¹		3.80 ¹² 4.40 ^{AT}
Cold-rolled	4.35 ¹⁻⁵⁻⁹⁻¹⁰ 5.35 ²³		4.35 ¹⁻⁶⁻⁹	4.35 ⁴		4.35 ⁷	4.35 ¹⁻⁶		4.35 ³			4.35 ¹		4.55 ¹²
Galvanized (10 gage)	4.80 ¹⁻⁹⁻¹⁰		4.80 ¹⁻⁹		4.80 ⁴	4.80 ⁷	6.00 ⁴					4.80 ¹		
Enameling (12 gage)	4.65 ¹		4.65 ¹⁻⁹			4.65 ⁷								
Long termes (10 gage)	5.20 ⁹⁻¹⁰						6.00 ⁴							
Hi str. low alloy, h.r.	5.40 ¹⁻⁹ 5.75 ⁹	5.40 ¹	5.40 ¹⁻⁶ 5.90 ⁹	5.40 ⁴			5.40 ¹⁻⁴⁻¹³		5.40 ³	5.85 ²⁰		5.40 ¹		
Hi str. low alloy, c.r.	6.55 ¹⁻⁹ 6.90 ⁹		6.55 ¹⁻⁶ 7.05 ⁹	6.55 ⁴			6.55 ⁴		6.55 ³			6.55 ¹		
Hi str. low alloy, galv.														
STRIP Hot-rolled	3.60 ^{9-4.00} ⁴¹ 3.75 ²⁸ 3.80 ²	3.50 ²⁰	3.50 ¹⁻⁶⁻⁸			3.50 ⁷	3.50 ¹⁻⁴⁻⁶ 4.00 ¹³		3.50 ³⁻⁴	3.90 ²⁰		3.50 ¹		4.40 ^{AT}
Cold-rolled	4.65 ¹⁻⁹ 5.00 ²³ 5.35 ²³	4.90 ⁶⁻⁶⁶	4.90 ⁹	4.65 ²		4.65 ⁷	4.65 ¹⁻⁹ 5.35 ¹³		4.65 ³			4.65 ¹		5.48 ^{AT} 5.80 ²⁴ 5.80 ²¹
Hi str. low alloy, h.r.	5.75 ⁹		5.50 ¹ 5.30 ² 5.80 ⁹				4.95 ⁴ , 5.50 ¹ 5.40 ¹³			5.55 ²⁰				
Hi str. low alloy, c.r.	7.20 ⁹			6.70 ⁵			6.20 ⁴ , 6.55 ¹³							
TINPLATE Cokes, 1.50-lb base box 1.25-lb, deduct 20¢	\$7.50 ¹⁻⁹⁻⁹ 15		\$7.50 ¹⁻⁹⁻⁹				\$7.50 ⁴					7.60 ¹	\$7.70 ²²	
Electrolytic 0.25, 0.50, 0.75 lb box	Deduct \$1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price													
BLACKPLATE, 29 gage Hollowware enameling	5.85 ¹ 6.15 ¹⁵		5.85 ¹				5.30 ⁴							
BARS Carbon steel	3.70 ¹⁻⁸ 3.85 ⁹	3.70 ¹⁻⁴⁻²³	3.70 ¹⁻⁴⁻⁶⁻⁸	3.70 ⁴	3.70 ¹		3.70 ¹⁻⁴⁻⁶		3.70 ³⁻⁴		3.70 ³			3.85 ¹ 4.70 ²¹
Reinforcing	3.70 ¹⁻⁵	3.70 ⁴	3.70 ¹⁻⁶⁻⁸	3.70 ⁴			3.70 ¹⁻⁴		3.70 ³⁻⁴		3.70 ³	3.70 ⁹		
Cold-finished	4.55 ²⁻⁴⁻⁵ 5.2-60-71	4.55 ²⁻⁶⁰⁻⁷⁰⁻²³	4.55 ²⁻⁴⁻⁷³	4.55 ²	4.55 ⁴									
Alloy, hot-rolled	4.30 ¹⁻¹⁷	4.30 ¹⁻⁴⁻²³	4.30 ¹⁻⁶⁻⁸		4.30 ⁴		4.30 ¹⁻⁶	4.30 ⁹	4.30 ³⁻⁴		4.30 ³			4.45 ¹
Alloy, cold-drawn	5.40 ¹⁷⁻⁵² 59-71	5.40 ⁴⁻⁶⁹	5.40 ⁴ 5.90 ⁷⁻⁴		5.40 ⁴			5.40 ⁹	5.40 ³					5.55 ⁴
Hi str. low alloy, h.r.	5.55 ¹⁻⁹		5.55 ¹⁻⁶ 6.05 ⁹	5.55 ⁴			5.55 ¹	5.55 ³	5.55 ²		5.55 ¹			
PLATE Carbon steel	3.70 ¹⁻⁵⁻¹³	3.70 ¹	3.70 ¹⁻⁶⁻⁸	3.70 ⁴ 4.00 ⁹			3.70 ¹⁻⁴ 3.85 ¹³		3.70 ³	4.15 ²⁰	3.70 ³	3.70 ¹		
Floor plates			4.75 ⁹	4.75 ⁵						4.75 ²⁰				
Alloy	4.75 ¹	4.75 ¹	4.75 ¹				5.20 ¹³			5.05 ²⁰	4.75 ³	4.75 ¹		
Hi str. low alloy	5.65 ¹⁻⁹	5.65 ¹	5.65 ¹⁻⁶	5.65 ⁴⁻⁵			5.65 ⁴ 5.70 ¹³			5.90 ²⁰	5.65 ³	5.65 ¹		
SHAPES, Structural	3.85 ¹⁻⁵ 3.90 ⁹	3.85 ¹⁻²⁰	3.85 ¹⁻⁸					3.70 ³	3.70 ³		3.70 ³			
Hi str. low alloy	5.50 ¹⁻⁸	5.50 ¹	5.50 ¹⁻⁶					5.50 ³	5.50 ³		5.50 ³			
MANUFACTURERS' WIRE Bright	4.85 ²⁻⁸ 5.10 ¹⁸	4.85 ⁹ 4.93		4.85 ²				Kokomo = 5.80 ³⁰			4.85 ³	4.95 ¹	Duluth = 4.85 ³	
PILING, Steel Sheet	4.45 ¹	4.45 ¹	4.45 ⁹						4.45 ¹					

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.					
Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
			F = \$79.00 ¹⁰		
	\$82.00 ⁹³		F = \$80.00 ¹⁰		
		\$66.00 ¹¹	F = \$75.00 ¹⁰		
	\$74.00 ⁹³	\$66.00 ¹¹	F = \$85.00 ¹⁰ SF, LA, S = \$85.00 ^{10, 62}		
	\$78.00 ⁹³		F = \$86.00 ¹⁰		
			SF = 4.90 ²⁴ LA = 4.90 ^{24, 67}		
	4.50 ⁹³	4.10 ^{4, 11}		Worcester = 4.40 ²	
		3.60 ^{4, 11}	SF, LA = 4.30 ²⁴	Niles = 5.25 ⁶⁴ , Geneva = 3.70 ¹⁰	
		4.35 ¹¹	SF = 5.30 ²⁴ F = 5.25 ¹⁰		
		4.80 ^{4, 11}	SF, LA = 5.55 ²⁴	Ashland = 4.80 ⁷	
			F = 6.35 ¹⁰		
			F = 7.40 ¹⁰		
4.10 ⁹³	3.90 ⁹³	3.50 ⁴	SF, LA = 4.25 ^{24, 62} F = 4.85 ¹⁰ , S = 4.50 ⁶²	Atlanta = 4.95 ⁶⁵ Minnequa = 4.55 ¹⁴	
			F = 6.25 ¹⁰ LS = 6.40 ²⁷	New Haven = 5.15 ² , 5.85 ⁶⁴	
		7.00 ¹¹	SF = 8.25 ²⁴		
Deduct \$1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price					
4.30 ⁹³	4.10 ⁹³	3.70 ^{4, 11}	SF, LA = 4.40 ²⁴	Atlanta = 4.25 ⁶³ Minnequa = 4.15 ¹⁴	
4.30 ⁹³	4.10 ⁹³	3.70 ^{4, 11}	SF, S = 4.45 ⁶² F = 4.35 ¹⁰	Atlanta = 4.25 ⁶³ Minnequa = 4.30 ¹⁴	
4.90 ⁹³	4.70 ⁹³		LA = 5.35 ⁶² F = 5.30 ¹⁰	Putnam, Newark = 4.95 ⁶⁰ Hartford = 5.10 ⁴ Los Angeles = 5.00 ⁴	
				Newark = 5.70 ⁶⁰ Worcester = 5.25 ⁶² Hartford = 5.85 ⁶⁴	
			F = 6.80 ¹⁰		
	4.10 ⁹³	3.70 ^{4, 11}	F = 4.30 ¹⁰ S = 4.80 ⁶² Geneva = 3.70 ¹⁰	Claymont = 4.15 ⁶⁰ Coatesville = 4.15 ²¹	
			F = 5.75 ¹⁰	Coatesville = 5.25 ²¹	
			F = 6.25 ¹⁰		
4.25 ⁹³	4.05 ⁹³	3.65 ^{4, 11}	SF = 4.20 ⁶² LA = 4.25 ^{24, 62} F = 4.25 ¹⁰ S = 4.30 ⁶²	Genova 3.65 ¹⁰ Minnequa 4.10 ¹⁴	
5.40 ⁹³	5.25 ⁹³	4.85 ^{4, 11}	SF, LA = 5.95 ²⁴	Worcester = 5.15 ²	

STEEL PRICES

INGOTS carbon forging, net ton
Alloy, net ton
BILLETS, BLOOMS, SLABS Carbon, re-rolling, net ton
Carbon forging billets, net ton
Alloy net ton
PIPE SKELP
WIRE RODS
SHEETS Hot-rolled (18 ga. & hvr.)
Cold-rolled
Galvanized (10 gage)
Enameling (12 gage)
Long ternes (10 gage)
Hi str. low alloy, h.r.
Hi str. low alloy, c.r.
Hi str. low alloy, galv.
STRIP Hot-rolled
Cold-rolled
Hi str. low alloy, h.r.
Hi str. low alloy, c.r.
TINPLATE Cokes, 1.50-lb base box 1.25 lb. deduct 20¢
Electrolytic 0.25, 0.50, 0.75 lb box
BLACKPLATE, 29 gage Hollowware enameling
BARs Carbon steel
Reinforcing†
Cold-finished
Alloy, hot-rolled
Alloy, cold-drawn
Hi str. low alloy, h.r.
PLATE Carbon steel
Floor plates
Alloy
Hi str. low alloy
SHAPES, Structural
Hi str. low-alloy
MANUFACTURERS' WIRE Bright

With Principal Offices

- 1 Carnegie-Illinois Steel Corp., Pittsburgh
- 2 American Steel & Wire Co., Cleveland
- 3 Bethlehem Steel Co., Bethlehem
- 4 Republic Steel Corp., Cleveland
- 5 Jones & Laughlin Steel Corp., Pittsburgh
- 6 Youngstown Sheet & Tube Co., Youngstown
- 7 Armco Steel Corp., Middletown, Ohio
- 8 Inland Steel Co., Chicago
- 9 Weirton Steel Co., Weirton, W. Va.
- 10 National Tube Co., Pittsburgh
- 11 Tennessee Coal, Iron & R. R. Co., Birmingham
- 12 Great Lakes Steel Corp., Detroit
- 13 Sharon Steel Corp., Sharon, Pa.
- 14 Colorado Fuel & Iron Corp., Denver
- 15 Wheeling Steel Corp., Wheeling, W. Va.
- 16 Geneva Steel Co., Salt Lake City
- 17 Crucible Steel Co. of America, New York
- 18 Pittsburgh Steel Co., Pittsburgh
- 19 Kaiser Steel Corp., Oakland, Calif.
- 20 Portsmouth Div., Detroit Steel Corp., Detroit
- 21 Lukens Steel Co., Coatesville, Pa.
- 22 Granite City Steel Co., Granite City, Ill.
- 23 Wisconsin Steel Co., South Chicago, Ill.
- 24 Columbia Steel Co., San Francisco
- 25 Copperweld Steel Co., Glassport, Pa.
- 26 Alan Wood Steel Co., Conshohocken, Pa.
- 27 Calif. Cold Rolled Steel Corp., Los Angeles
- 28 Allegheny Ludlum Steel Corp., Pittsburgh
- 29 Worth Steel Co., Claymont, Del.
- 30 Continental Steel Corp., Kokomo, Ind.
- 31 Rotary Electric Steel Co., Detroit
- 32 Laclede Steel Co., St. Louis
- 33 Northwestern Steel & Wire Co., Sterling, Ill.
- 34 Keystone Steel & Wire Co., Peoria, Ill.
- 35 Central Steel & Wire Co., Harrisburg, Pa.
- 36 Carpenter Steel Co., Reading, Pa.
- 37 Eastern Stainless Steel Corp., Baltimore
- 38 Washington Steel Corp., Washington, Pa.
- 39 Jessop Steel Co., Washington, Pa.
- 40 Blair Strip Steel Co., New Castle, Pa.
- 41 Superior Steel Corp., Carnegie, Pa.
- 42 Timken Steel & Tube Div., Canton, Ohio
- 43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- 44 Reeves Steel & Mfg. Co., Dover, Ohio
- 45 John A. Roebling's Sons Co., Trenton, N. J.
- 46 Simonds Saw & Steel Co., Fitchburg, Mass.
- 47 McLouth Steel Corp., Detroit
- 48 Cold Metal Products Co., Youngstown
- 49 Thomas Steel Co., Warren, Ohio
- 50 Wilson Steel & Wire Co., Chicago
- 51 Sweet's Steel Co., Williamsport, Pa.
- 52 Superior Drawn Steel Co., Monaca, Pa.
- 53 Tremont Nail Co., Wareham, Mass.
- 54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
- 55 Ingersoll Steel Div., Chicago
- 56 Phoenix Iron & Steel Co., Phoenixville, Pa.
- 57 Fitzsimmons Steel Co., Youngstown
- 58 Stanley Works, New Britain, Conn.
- 59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
- 60 American Cladmetals Co., Carnegie, Pa.
- 61 Cuyahoga Steel & Wire Co., Cleveland
- 62 Bethlehem Pacific Coast Steel Corp., San Francisco
- 63 Follansbee Steel Corp., Pittsburgh
- 64 Niles Rolling Mill Co., Niles, Ohio
- 65 Atlantic Steel Co., Atlanta
- 66 Acme Steel Co., Chicago
- 67 Joslyn Mfg. & Supply Co., Chicago
- 68 Detroit Steel Corp., Detroit
- 69 Wyckoff Steel Co., Pittsburgh
- 70 Bliss & Laughlin, Inc., Harvey, Ill.
- 71 Columbia Steel & Shafting Co., Pittsburgh
- 72 Cumberland Steel Co., Cumberland, Md.
- 73 La Salle Steel Co., Chicago
- 74 Monarch Steel Co., Inc., Hammond, Ind.
- 75 Empire Steel Co., Mansfield, Ohio
- 76 Mahoning Valley Steel Co., Niles, Ohio
- 77 Oliver Iron & Steel Co., Pittsburgh
- 78 Pittsburgh Screw & Bolt Co., Pittsburgh
- 79 Standard Forging Corp., Chicago
- 80 Driver Harris Co., Harrison, N. J.
- 81 Detroit Tube & Steel Div., Detroit
- 82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
- 83 Sheffield Steel Corp., Kansas City
- 84 Plymouth Steel Co., Detroit
- 85 Wickwire Spencer Steel, Buffalo
- 86 Angell Nail and Chaplet, Cleveland
- 87 Mid-States Steel & Wire, Crawfordsville, Ind.
- 88 National Supply, Toledo, Ohio
- 89 Wheatland Tube Co., Wheatland, Pa.
- 90 Mercer Tube & Mfg. Co., Sharon, Pa.

STAINLESS STEELS

Base prices, in cents per pound,
f.o.b. producing point

Product	301	302	303	304	316	321	347	410	416	430
Ingot, re-rolling	14.25	15.00	16.50	16.00	24.25	19.75	21.50	12.75	14.75	13.00
Slabs, billets re-rolling	16.50	19.75	21.75	20.75	31.75	26.00	26.25	16.50	20.00	16.75
Forg. discs, die blocks, rings	34.00	34.00	36.50	35.50	52.50	40.00	44.50	28.00	28.50	26.50
Billets, forging	26.25	26.25	28.25	27.50	41.00	31.00	34.75	21.50	22.00	22.00
Bars, wires, structurals	31.25	31.25	33.75	32.75	48.75	36.75	41.25	25.75	26.25	26.25
Plates	33.00	33.00	35.00	35.00	51.50	40.50	45.00	27.00	27.50	27.50
Sheets	41.00	41.00	43.00	43.00	56.50	49.00	53.50	36.50	37.00	38.00
Strip, hot-rolled	26.50	28.00	32.25	30.00	48.25	36.75	41.00	23.50	30.25	24.00
Strip, cold-rolled	34.00	36.50	40.00	38.50	56.50	48.00	52.00	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—*Sheets*: Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38 (type 316 add 5¢); 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.

New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.
Strip: Midland, Pa., 17; Cleveland, 23; Carnegie, Pa., 41; McKeesport, Pa., 54;
 Reading, Pa., 56; Washington, Pa., 38 (type 316 add 56); W. Leechburg, Pa., 28; Bridge-
 ville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J.,
 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, Pa., 13; Butler,
 Pa., 7.

Bars: Baltimore, 7; Duquesne, Pa. 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill. 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28 (type 416 add $\frac{1}{2}\phi$); Butler, Pa., 7; Chicago, 1; Munnhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

54; Massillon, Canton, Ohio. 4; Watervliet. 28; Pittsburg, Chicago. 1.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nills	Woven Wire Fence 9-15" ga.	Fence Posts	Single Loop Bale Tie	Twisted Barbless Wire	Gal. Barbed Wire	March Wire Ann'd.	March Wire Gal.
	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	Base Col.	¢/lb.	¢/lb.
Alabama City-4	118	126		123		136	5.70	5.90
Aliquippa, Pa.-5	118	132			136	140	5.70	6.10
Atlanta-65	113	133		126	126	143	5.95	6.40
Bartonville-34	116	130	140	123	143	143	5.95	6.10
Buffalo-85								
Chicago-4	118	126	121	123		136		
Cleveland-86							5.70	5.80
Cleveland-2		130						
Crawfordsville-87	118	130		123		140	5.70	5.80
Donora, Pa.-2	118	130		123		138	5.70	5.80
Duluth-2	118	126		123			5.70	5.80
Fairfield, Ala.-11	118	126		123			5.70	5.80
Houston-83					140		5.70	6.10
Johnstown, Pa.-3	118	130		123		140	5.70	5.80
Joliet, Ill.-2	118	130		123		140	5.70	5.80
Kokomo, Ind.-30	120	128		125	138	138	6.05	
Los Angeles-62								
Kansas City-83	118	130		123		140		
Minneapolis-14	123	138	130	128	146	146	5.95	6.40
Monessen-18	124	135				145	5.95	6.40
Moline, Ill.-4			112					
Palmer-85								
Pittsburg, Cal.-24	137			147	156		6.85	6.80
Portsmouth-20	124	137			147	147	6.10	6.60
Rankin, Pa.-2	118	130				140	5.70	5.85
San Francisco-14		118	125	116	123		136	5.70
So. Chicago, Ill.-4								
So. San Francisco-14							6.65	7.10
Sparrows Pt.-13	120			147	142	132	5.80	6.25
Sterling, Ill.-33	118	130	140	123	140	140		
Struthers, Ohio-6							6.05	6.60
Torrance, Cal.-24	138						6.05	6.60
Worcester-2	124						6.05	6.15
Williamsport, Pa.-51								

Cut Nails, carloads, base, \$6.75 per 100 lb. (less 20¢ to jobbers)-at Conshohocken, Pa., (26), Wareham, Mass. (83) Wheeling, W. Va., (15).

CAST IRON WATER PIPE

Per net ton

6 to 24-in., del'd Chicago	\$105.30	to \$108.80
6 to 24-in., del'd N. Y.	104.60	to 105.50
6 to 24-in., Birmingham	91.50	to 96.00

6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less \$108.50 to \$113.00

Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.

PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS							
	1½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½-3 In.		3½-4 In.			
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.		
STANDARD																						
T. & C.																						
Bethlehem-3	34.0	12.0	37.0	16.0	39.5	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0								
Cleveland-4	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0								
Oakland-19	25.0	3.0	28.0	7.0	30.5	10.5	31.0	21.0	31.5	22.0	32.0	12.5	32.5	13.0								
Pittsburgh-5	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	8.0	32.5	11.5	34.5	13.5		
Pittsburgh-10	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5		
St. Louis-32	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0								
Sharon-80	35.0	13.0	38.0	17.0	40.0	20.0	40.5	21.5	40.5	21.0	41.0	21.5	41.5	22.0								
Toledo-88	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5		32.5		34.5			
Wheeling-15	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0								
Wheeland-88	36.0	14.0	39.0	17.0	39.5	19.5	40.5	20.5	40.5	21.0	41.0	21.5	42.0	22.5								
Youngstown-6	36.0	14.0	39.0	16.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5		
EXTRA STRONG, PLAIN ENDS																						
Bethlehem-3	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0								
Cleveland-4	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0								
Oakland-19	24.5	4.0	28.5	18.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0								
Pittsburgh	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0	36.0	15.0		
Pittsburgh-10	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.0		
St. Louis-32	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0								
Sharon-80	34.5	14.0	38.5	18.0	40.0	21.0	40.5	21.5	40.5	22.0	41.0	22.5	41.5	23.0								
Toledo-88	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0		33.0		36.5			
Wheeling-15	35.5	16.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0								
Wheeland-88	34.0	13.5	38.0	17.5	39.5	19.5	39.5	20.5	39.5	21.0	40.0	21.5	41.0	22.5								
Youngstown-6	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.0		

Galvanized discounts based on zinc at 17¢ per lb., East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ¼ in., ¾ in., and 1 in., 1¢; 1½ in., 1½ in., 2 in., 2¢; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.81¢ to 17.50¢ per lb., use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only, butt weld and seamless, 1 pt. higher discount. Plain ends, butt weld and seamless, 3 in. and under, 3½ pts. higher discount. Butt weld ladders' discount, 5 pts.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Axles	Screw Spikes	Tie Plates	Track Boiler Unretd
Bessemer-1	3.60	4.00	4.70					
Chicago-4				6.15				
Ensley-11	3.60	4.00						
Fairfield-11		4.00	4.40			5.60	4.50	
Gary-1	3.60	4.00					4.50	
Ind. Harbor-8	3.60		4.70	6.15	5.25	5.60	4.50	
Johnstown-3		3.75			5.60	5.60		
Jolet-1		3.75	4.70					
Kansas City-63				5.85		6.60	4.50	
Lackawanna-3	3.60	4.00	4.70					9.60
Lebanon-3				6.15				9.60
Minnequa-14	3.60	4.50	4.70	6.15		6.60	4.50	9.60
Pittsburgh-77						9.35		9.60
Pittsburgh-78								9.60
Pittsburgh-5				6.15				9.60
Pittsburgh-24							4.25	
Seattle-62				6.10			4.35	
Steelon-3	3.60		4.70				4.50	
Struthers-6				5.60				
Torrance-24							4.65	
Youngstown-4				6.15				

Track Bolts, heat treated, to railroads, 9.85¢ per lb.

BOILER TUBES

Seamless steel, electric welded commercial boiler tubes, locomotive tubes, minimum wall, per 100 ft at mill, c.i. lots, cut lengths 10 to 24 ft.

OD in.	gage in. BWG	Seamless H.R.	Electric C.D.	Weld H.R.	Weld C.D.
2	13	\$22.67	\$26.66	\$21.99	\$25.86
2 1/2	12	30.48	35.84	29.57	34.76
3	12	33.90	39.90	32.89	34.80
3 1/2	11	42.37	49.89	41.10	48.39
4	10	52.60	61.88	51.03	60.02

Pittsburgh Steel add, H-R: 2 in., 62¢; 2½ in., 84¢; 3 in., 92¢; 3½ in., \$1.17; 4 in., \$1.45. Add, C-R: 2 in., 74¢; 2½ in., 99¢; 3 in., \$1.10; 3½ in., \$1.37; 4 in., \$1.70.

FLUORSPAR

Washed gravel fluor spar, f.o.b. cars,
Rosiclare, Ill. Base price, per ton net:
Effective CaF₂ content:

70% or more	\$41.00
60% or less	38.00

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 20¢ to base price except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul (*), add 15¢; Philadelphia, add 25¢).

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (18 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled			Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140 Ann.
Baltimore	5.80	5.84	5.07	5.04	.....	5.80	6.14	6.04	6.89	.....	.....	.....	.....
Birmingham*	5.60	5.40	5.75	5.55	.....	5.95	5.70	5.55	.....	.....	.....	.....	.....
Boston	6.20	7.00	7.74	5.15	.....	6.48	6.20	6.05	6.84	10.25	10.55	11.90	12.20
Buffalo	5.60	5.40	7.74	5.86	.....	6.05	5.80	5.60	6.40	10.15	10.45	11.80	12.10
Chicago*	5.60	5.40	7.75	5.55	.....	5.80	5.70	5.55	6.30	9.80	10.10	11.45	11.75
Cincinnati*	5.87	6.44	7.39	5.80	.....	6.19	6.09	5.80	6.61	10.15	10.45	11.80	12.10
Cleveland	5.60	5.40	8.10	5.69	6.90	5.92	5.82	5.57	6.40	9.91	10.21	11.56	11.86
Detroit	5.76	5.53	7.89	5.94	.....	5.99	6.09	5.84	6.56	10.11	10.41	11.76	12.06
Houston	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indianapolis	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas City	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	6.35	7.90	8.85	6.40	8.70 ¹	6.40	6.35	6.35	7.55	11.30	11.30	13.20	13.50
Memphis	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Milwaukee	5.74	6.54	7.89	5.69	.....	5.94	5.84	5.69	6.44	9.94	10.24	11.59	11.89
New Orleans*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New York	5.97- 6.27	7.54 ¹	8.44 ²	6.89	.....	6.58	6.40	6.42	7.29	10.45	10.75	.....	.....
Norfolk	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philadelphia*	6.90	6.80	8.00	6.10	.....	6.05	5.90	6.05	6.88	10.15	10.45	.....	.....
Pittsburgh	5.60	6.40	7.75	5.65- 5.95	.....	5.75	5.70	5.55	6.15	9.80	10.10	11.45	11.75
Portland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salt Lake City	7.85	.....	9.70	8.70	.....	8.05	8.30	8.85	9.00	.....	.....	.....	.....
San Francisco*	6.65	8.05 ²	8.55- 8.90 ²	6.60	.....	6.50	6.45	6.45	8.20	11.30	11.30	13.20	13.20- 13.50
Seattle	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Louis	5.85	6.65	8.00	5.80	.....	6.13	6.03	5.80	6.55	10.05	10.35	11.70	12.00
St. Paul*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

BASE QUANTITIES (Standard unless otherwise keyed on prices.)

Hot-rolled sheets and strip, hot rolled bars and bar shapes, structural shapes, plate, galvanized sheets and cold-rolled sheets; 2000 to 9999 lb. Cold-finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb.

All HR products may be combined to determine quantity bracket. All galvanized sheets may be combined to determine quantity bracket. CR sheets may not be combined with each other or with galv. sheets to determine quantity bracket.

Exceptions:

(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 to 5999 lb; (6) 1000 lb and over; (7) 500 to 1499 lb; (8) 400 lb and over; (9) 400 to 9999 lb; (10) 500 to 9999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 9999 lb; (16) 6000 lb and over; (17) up to 1999 lb; (18) 1000 to 4999 lb; (19) 1500 to 3499 lb; (20) CR sheets may be combined for quantity; (21) 3 to 24 bundles.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low. Phos.
Bethlehem	54.00	54.50	55.00	55.50		Boston	Everett	\$60-80		52.85-53.05	53.55-53.75		
Birmingham	48.38	48.88				Boston	Steelton	6.90		58.79	59.29	59.29	68.90
Buffalo	62.00	62.50	53.00			Brooklyn	Bethlehem	4.29		55.58			
Chicago	62.00	62.50	52.50	53.00		Cincinnati	Birmingham	6.70	55.08	55.58			
Cleveland	62.00	62.50	52.50	53.00	57.00	Jersey City	Bethlehem	2.63		57.13	57.63	58.13	
Duquesne, Tex.	48.00	48.50	48.50			Los Angeles	Geneva-Ironton	7.70	59.70	60.20			
Duluth	62.00	62.50	52.50	53.00		Los Angeles	Fontana		56.70	57.20			
Erie	62.00	62.50	52.50	53.00		Mansfield	Cleveland, Toledo	3.33	55.33	55.83	55.83	56.33	60.33
Everett		52.25	52.75			Philadelphia	Bethlehem	2.39	56.39	56.89	57.39	57.89	
Fontana	55.00	55.50				Philadelphia	Swedeland	1.44	57.44	57.94	58.44	58.94	
Granite City	53.90	54.40	54.90			Philadelphia	Steelton	3.09	57.09	57.59	58.09	58.59	63.09
Hubbard	62.00	62.50	52.50			Rochester	Buffalo	2.63	54.63	55.13	55.63		
Ironton, Utah	62.00	62.50				San Francisco	Geneva-Ironton	7.70	59.70	60.20			
Pittsburgh	62.00*			53.00		San Francisco	Fontana		56.70	57.20			
Neville Island	62.00	62.50	62.50	53.00		Seattle	Geneva-Ironton	7.70	59.70	60.20			
Geneva, Utah	62.00	62.50				Seattle	Fontana		56.70	57.20			
Sharpsville	62.00	62.50	52.50	53.00		St. Louis	Granite City	0.75 Arb.	51.65	52.15	52.65		
Steelton	54.00	54.50	55.00	55.50	60.00	Syracuse	Buffalo	3.58	55.58	56.08	56.58		
Swedeland	56.00	56.50	57.00	57.50									
Toledo	62.00	62.50	52.50	53.00									
Troy, N. Y.	54.00	54.50	55.00		60.00								
Youngstown	62.00	62.50	52.50	53.00									

* Monessen, \$54.00.

Producing points prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 35¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢

per ton for each 0.50 pct manganese content in excess of 1.00 pct, \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 0.01 to 0.50 pct C/L per g.t. f.o.b. Jackson, Ohio—\$62.50; f.o.b. Buffalo, \$60.75. Add \$1.50 per ton for each additional 0.50 pct Si up to 17 pct.

Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for 0.75 pct or more P. Bessemer ferro-silicon prices are \$1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus \$62.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, \$70.50. High phosphorus charcoal pig iron is not being produced.

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

	Pct Off List	
	Less Case	C.
1/2 in. & smaller x 6 in. & shorter	15	28 1/2
9/16 in. & 5/8 in. x 6 in. & shorter	18 1/2	30 1/2
3/4 in. & larger x 6 in. & shorter	17 1/2	29 1/2
All diam. longer than 6 in.	14	27 1/2
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	

Nuts, Hot Pressed, Cold Punched—Sq

	Pct Off List	
	Less Keg. (Reg.)	Less Keg. K. (Hvy.)
1/2 in. & smaller	15	28 1/2
9/16 in. & 5/8 in.	12	25
3/4 in. to 1 1/2 in.		6 1/2
Inclusive	9	23
1 1/2 in. & larger	7 1/2	21

Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	21
3/4 in. to 1 1/2 in.				
Inclusive	12	25	2	17 1/2
1 1/2 in. & larger	8 1/2	23	2	17 1/2

Nuts, Cold Punched—Hexagon

1/2 in. & smaller	26	37	22	34
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2
3/4 in. to 1 1/2 in.				
Inclusive	19 1/2	31 1/2	12	25
1 1/2 in. & larger	12	25	6 1/2	21

Nuts, Semi-Finished—Hexagon

	Reg.	Hvy.
1/2 in. & smaller	35	45
9/16 in. & 5/8 in.	29 1/2	40 1/2
3/4 in. to 1 1/2 in.		
Inclusive	24	36
1 1/2 in. & larger	13	26

Light

7/16 in. & smaller	35	45
1/2 in. thru 5/8 in.	28 1/2	39 1/2
3/4 in. to 1 1/2 in.		
Inclusive	26	37

Stove Bolts

	Pct Off List
Packaged, steel, plain finished	56—10
Packaged, plated finish	41—10
Bulk, plain finish	67*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

	Base per 100 lb
1/2 in. & larger	\$7.85
	Pct Off List
7/16 in. & smaller	36
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.	

Cap and Set Screws

	Pct Off List
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 3/4 in. x 6 in., SAE 1020, bright	54
3/4 in. thru 1 in. up to & including 6 in.	48
1/2 in. thru 3/4 in. x 6 in. & shorter high C double heat treat	46
3/4 in. thru 1 in. up to & including 6 in.	41
Milled studs	35
Flat head cap screws, listed sizes	16
Fillister head cap, listed sizes	34
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	53

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

	Per gross ton
Old range, bessemer	\$8.70
Old range, nonbessemer	8.55
Mesabi, bessemer	8.45
Mesabi, nonbessemer	8.30
High phosphorus	7.70

After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb
GRAPHITE		
17, 18, 20	60, 72	17.00¢
8 to 16	48, 60, 72	17.00¢
7	48, 60	18.64¢
6	48, 60	19.95¢
4, 5	40	20.48¢
3	40	21.53¢
2 1/2	24, 30	22.05¢
2	24, 30	24.15¢
CARBON		
40	100, 110	7.65¢
35	65, 110	7.65¢
30	65, 84, 110	7.65¢
24	72 to 104	7.65¢
20	84, 90	7.65¢
17	60, 72	7.65¢
14	60, 72	8.16¢
10, 12	60	8.42¢
8	60	8.67¢

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa. (21) ..	*29.5	
Washgtn, Pa. (39) ..	*29.5	
Claymont, Del. (29) ..	*28.00	
Conshohocken, Pa. (26) ..		*24.00
New Castle, Ind. (55) ..	*26.50	*25.50
Nickel-carbon		
10 pct. Coatesville (21) ..	32.5	
Inconel-carbon		
10 pct Coatesville (21) ..	40.5	
Monel-carbon		
10 pct Coatesville (21) ..	33.5	
No. 302 Stainless-copper-stainless, Carnegie, Pa. (60) ..		77.00
Aluminized steel sheets, hot dip, Butler, Pa. (7) ..		7.75

*Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.10
18	4	1	—	5	\$1.72
18	4	2	—	—	\$1.245
1.5	4	1.5	3	—	78.5¢
6	4	2	6	—	84¢
High-carbon chromium					63.5¢
Oil hardened manganese					35¢
Special carbon					32.5¢
Extra carbon					27¢
Regular carbon					23¢

Warehouse prices on and east of Mississippi are 3¢ per lb higher. West of Mississippi, 5¢ higher.

ELECTRICAL SHEETS

22 gage, HR cut lengths, f.o.b. mill

	Cents per lb.
Armature	*6.75
Electrical	*7.25
Motor	*8.50
Dynamo	9.30
Transformer 72	9.85
Transformer 65	10.40
Transformer 58	11.10
Transformer 52	11.90
PRODUCING POINTS—Beech Bottom, W. Va., 15; Brackenridge, Pa., 28; Follansbee, W. Va., 63; Granite City, Ill., 22*, add 70¢; Indiana Harbor, Ind., 3; Mansfield, Ohio, 75; Niles, Ohio, 64, add 30¢; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.	

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	\$14.00 to \$14.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$17.00 to \$17.50
Foundry, oven coke	
Buffalo, del'd	\$25.35
Chicago, f.o.b.	21.00
Detroit, f.o.b.	23.00
New England, del'd	24.30
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Plainsville, Ohio, f.o.b.	23.25
Erie, del'd	\$22.29 to
Cleveland, del'd	22.62
Cincinnati, del'd	22.71
St. Paul, f.o.b.	21.00
St. Louis, f.o.b.	24.90
Birmingham, del'd	20.75

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	5.35¢
0.41 to 0.60 carbon	6.80¢
0.61 to 0.80 carbon	7.40¢
0.81 to 1.05 carbon	9.35¢
1.06 to 1.35 carbon	11.65¢
Worcester, add 0.30¢; Sharon, New Britain, Carnegie, New Castle, add 0.35¢; Detroit, 0.26 to 0.40 carb., add 60¢; other grades add 20¢. New Haven, 0.26 to 0.40 carb., add 85¢; other grades add 30¢.	

REFRACTORIES

(F.o.b. works)

	Carloads, Per 1000
Fire Clay Brick	
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5) ..	\$94.60
No. 1 Ohio	88.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	8.00
No. 2 Ohio	79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50) ..	13.75

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$94.60
Childs, Pa.	99.00
Hays, Pa.	109.10
Chicago District	104.50
Western Utah and Calif.	111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago	111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) ..	16.50
Silica cement, net ton, bulk, Hays, Pa.	18.70
Silica cement, net ton, bulk, Ensley, Ala.	17.00
Silica cement, net ton, bulk, Chicago District	17.40
Silica cement, net ton, bulk, Utah and Calif.	24.75

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester	\$77.00
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Magnesite Brick

Standard, Baltimore	\$99.00
Chemically bonded, Baltimore	88.00

Grain Magnesite

St. % -in. grains

Domestic, f.o.b. Baltimore, in bulk fines removed	\$62.70
Domestic, f.o.b. Chewelah, Wash., in bulk	36.30
in sacks	41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ ..	\$12.00
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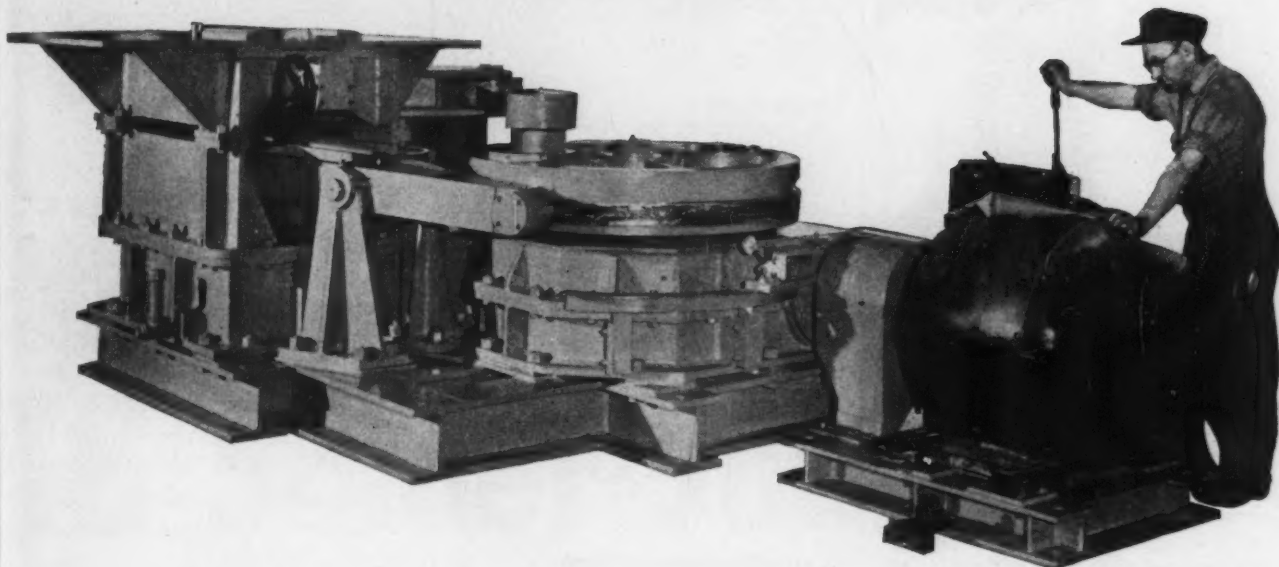
METAL POWDERS

Per pound, f.o.b. shipping point, in lots, for minus 100 mesh.

Swedish sponge iron c.l.f.	7.4¢ to 9.4¢
New York, ocean bags...	
Canadian sponge iron, del'd, in East	10.00¢
Domestic sponge iron, 98+ % Fe, carload lots	9.0¢ to 15.4¢
Electrolytic iron, annealed, 99.5+ % Fe	36.0¢ to 39.5¢
Electrolytic iron unannealed, minus 325 mesh, 99+ % Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+ % Fe	63.0¢ to 80.4¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.3+ % Fe	70.0¢ to \$1.31
Aluminum	29.00¢
Brass, 10 ton lots	30.00¢ to 32.25¢
Copper, electrolytic 10.25¢ plus metal value	
Copper, reduced ... 10.00¢ plus metal value	
Cadmium 100-199 lb., 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quantity	\$3.50
Lead	6.5¢ plus metal value
Manganese	52.00¢
Molybdenum, 99%	\$2.50
Nickel, unannealed	75.5¢
Nickel, annealed	75.5¢
Nickel, spherical, unannealed	75.5¢
Silicon	34.00¢
Solder powder, .65¢ to .85¢ plus met. value	
Stainless steel, 302	75.00¢
Tin	11.00¢ plus metal value
Tungsten, 99%	\$3.40
Zinc, 10 ton lots	20.50¢ to 22.50¢

No Excess Weight

when you use **WELDMENTS**



This stirrup-former assembly, built almost entirely with Bethlehem Weldments, weighs 18,350 lb. It is approximately 52 in. high, 101 in. long, and 86 in. wide.

When you use Bethlehem Weldments in the manufacture of machines, pressure vessels, and other types of equipment, you'll find that excess weight is reduced to the minimum.

Bethlehem Weldments make possible decided savings in weight because they are made from rolled-steel plates, structural shapes and other sections of the exact thicknesses required. They are accurately flame-cut to customer specifications, and are then welded either into simple parts or intricate assemblies.

Bethlehem Weldments offer wide freedom in design, and can be produced in virtually any size. They can also be used in combination with steel castings or forgings. What's more, our modern shop facilities include bending, forming, flame-cutting and stress-relieving equipment.

If you'd like to learn more about the use of Bethlehem Weldments, call the nearest Bethlehem sales office, or write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Fabricated Steel Construction

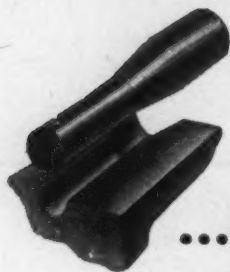
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BETHLEHEM WELDMENTS

December 14, 1950

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scrap
metal
by turning!



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Swaging

on



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The Torrington Rotary Swaging Machine uses every bit of stock. With 4000 hammer blows a minute, swaging reduces, sizes, rounds, tapers and points rod, wire and tubing. It makes metal tougher and more resilient. It hammers away minor surface defects.

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IRON AGE MARKETS & PRICES

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Sl.)
0.06% C 30.25 0.20% C 29.25
0.10% C 29.75 0.50% C 29.00
0.15% C 29.50 1.00% C 28.75
2.00% C 28.50
65-69% Cr, 4-9% C 31.75
62-66% Cr, 4-6% C, 6-9% Sl. 22.60

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.35% N.

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Sl, 4-6% Mn, 4-6% C.

Carloads 21.60
Ton lots 22.75
Less ton lots 25.25

Low carbon type: 62-66% Cr, 4-6% Sl, 4-6% Mn, 1.25% max. C.

Carloads 27.75
Ton lots 30.05
Less ton lots 31.85

Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% Max. C. 31.09
0.50% max. C. 1.05
.00 min. C. 1.04

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Sl 42-49%, C 0.05% max.)
Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.00¢ per lb of contained Sl.
Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.20¢ per lb contained Sl.

Calcium-Silicon

Contract price per lb of alloy, dump, delivered.

30-33% Ca, 60-65% Sl, 3.00% max. Fe.
Carloads 19.00
Ton lots 22.10
Less ton lots 23.60

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, dump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Sl.
Carloads 20.00
Ton lots 22.30
Less ton lots 23.30

CM5Z

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Sl, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-14.00% Sl, 0.75 to 1.25% Zr, 3.50-5.00% C.
Ton lots 20.75
Less ton lots 22.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Sl, 3-11% Mn.

Ton lots 16.50¢
Less ton lots 17.75¢

Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Sl 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed 18.00¢
Ton lots to carload packed 19.00¢
Less ton lots 20.50¢

5M2

Contract price, cents per pound of alloy, delivered, 60-65% Sl, 5-7% Mn, 5-7% Zr, 30% Fe, ½ in. x 12 mesh.

Ton lots 17.25
Less ton lots 18.50

(Prices continued on p. 164)

TO INSURE
PROMPT
DELIVERIES...

UNBRAKO



"STANDARD"
RECOMMENDS
STANDARDS

You can depend on prompt deliveries of UNBRAKO Products when you use standard sizes. For, despite shortages, stepped-up demand and other problems of the emergency, we've been able to keep full stocks of UNBRAKO "standards" on our dealers' shelves—ready for immediate delivery. And that's not all . . . Every time you use a standard size UNBRAKO it represents a substantial saving over the cost of a "special." Be sure you have our latest catalog of UNBRAKO standard products. Send for your copy of Bulletin 643-R today.

SOCKET

UNBRAKO

SCREWS

Knurled Head Socket Cap Screws
Flat Head Socket Cap Screws
Self-Locking Socket Set Screws

Knurled Head Stripper Bolts
Precision-Ground Dowel Pins
Fully-Formed Pressure Plugs

STANDARD PRESSED STEEL CO.

JENKINTOWN 10, PA.

ALLIS-CHALMERS Induction Heaters



SOLDERS
OVER 500
UNITS PER HOUR

18 Solder Joints—1¢

THIS EXAMPLE is typical of users' reports on hundreds of jobs using Allis-Chalmers Induction Heaters. In case after case, production proved faster and cheaper with Allis-Chalmers Induction Heaters.

Best of all, these units are highly versatile! The same heater can braze, solder, anneal, case and through harden by simply changing the work coil. Work coils are easy to install. When coils are changed, there's no need for additional output transformers (needed on most units) which require special shielding and skilled help to install.

Cost per part processed is amazingly low on high production items as shown in the example above. But even where production is fairly low,

cost is surprisingly low because the cost per hour to own and operate an Allis-Chalmers Induction Heater is probably less than you realized. This low cost plus versatility makes the unit a welcome addition in many job shops.

COST PER HOUR

to own and operate an Allis-Chalmers Induction Heater:

	10 kw unit	20 kw unit
Tube replacement (5,000 hrs)	0.070	0.110
Fixed energy	.020	.034
Load energy 50% cycle	.140	.200
Water	.010	.032
Amortization 20,000 hrs	.244	.354
Total cost	\$0.484	\$0.730

Call your nearby Allis-Chalmers Sales Office and find out what Induction Heat — the A-C way — can do to your production costs.

Send Coupon Now!

ALLIS-CHALMERS, 1019A SO. 70 ST.
MILWAUKEE, WIS.

Please send me Induction Heater booklet 6430A.

Name _____

Title _____

Company _____

Street _____

City _____

State _____

A-3195



ALLIS-CHALMERS

December 14, 1950

HARTFORD SPECIAL SWAGERS

save time and
material
on turning
operations



Swaging is the most efficient method of producing straight, uniform, round bars. It is much faster than any turning, hammering or other methods. No material is removed during swaging; strength and hardness of material is increased; a finer, smoother finish is imparted.

Hartford Special Swagers feature hardened and ground liners in die slot of spindle for longer wear of operating parts. All swagers equipped with stop rods to assure even opening of die along entire length.

Take advantage of our 60 years of swaging experience. Write for more information now.

HARTFORD
Special

THE HARTFORD SPECIAL MACHINERY CO.
HARTFORD 5, CONNECTICUT

Send me complete information on your
Swaging and Hammering Machines.

Name _____ Pos. _____
Firm _____
Street _____
City _____ Zone _____ State _____

IRON AGE MARKETS & PRICES FOUNDED 1855

FERROALLOYS

Ferromanganese

78-82% Mn. maximum contract base price, gross ton, lump size.
F.o.b. Birmingham \$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont., Ashtabula, O. \$185
F.o.b. Johnstown, Pa. \$187
F.o.b. Sheridan, Pa. \$185
F.o.b. Etna, Clairton, Pa. \$176
\$2.00 for each 1% above 82% Mn. penalty, \$2.15 for each 1% below 78%.
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.
Carload, bulk 10.45
Ton lots 12.05

Spiegeleisen

Contract prices gross ton, lump, f.o.b.
16-19% Mn 19-21% Mn
3% max. Si 3% max. Si
Palmerton, Pa. \$69.00 \$70.00
Pgh. or Chicago 70.00 71.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.
Carload, packed 29.75
Ton lots 31.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads 25
Ton lots 30
Less ton lots 32

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn 19.15¢

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd., Mn. 85-90%.
Carloads Ton Less
0.07% max. C, 0.06% P, 90% Mn 26.25 28.10 29.30
0.07% max. C 25.75 27.60 28.80
0.15% max. C 25.25 27.10 28.30
0.30% max. C 24.75 26.60 27.80
0.50% max. C 24.25 26.10 27.30
0.75% max. C, 7.00% max. Si 21.25 23.10 24.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn. 18-20% Si, 1.5% max. C. For 2% max. C. deduct 0.2¢.
Carload bulk 9.60
Ton lots 11.25
Briquet, contract basis carloads, bulk delivered, per lb of briquet 10.85
Ton lots 11.45

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$86.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$80.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.
96% Si, 2% Fe 20.70
97% Si, 1% Fe 21.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 1 lb Si briquets.
Carload, bulk 6.75
Ton lots 8.35

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.
25% Si 19.00 75% Si 14.30
50% Si 12.00 85% Si 15.55
90-95% Si 17.50

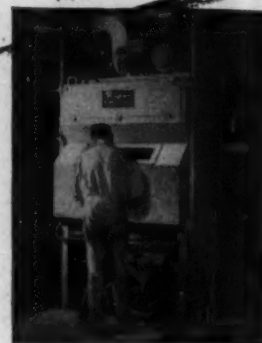
Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.
Cast Turnings Distilled
Ton lots \$2.05 \$2.95 \$3.75
Less ton lots 2.40 3.30 4.55
(Prices Continued on Page 166)

At Fred Heinzelman & Sons NEW YORK, N.Y.

Pangborn Hydro-Finish
CUTS HAND POLISHING
OF DIES 60%⁰

reports Mr. J. L. Crosby,
General Manager



Shown here is the Pangborn Hydro-Finish unit which set new records at Fred Heinzelman & Sons. A pioneer of heat treated dies, the company reports: Hydro-Finish removes heat treat oxide discoloration, cuts hand polishing 60% to 70%, holds tolerances to a precision .0001!"

Find out how HYDRO-FINISH can save you money

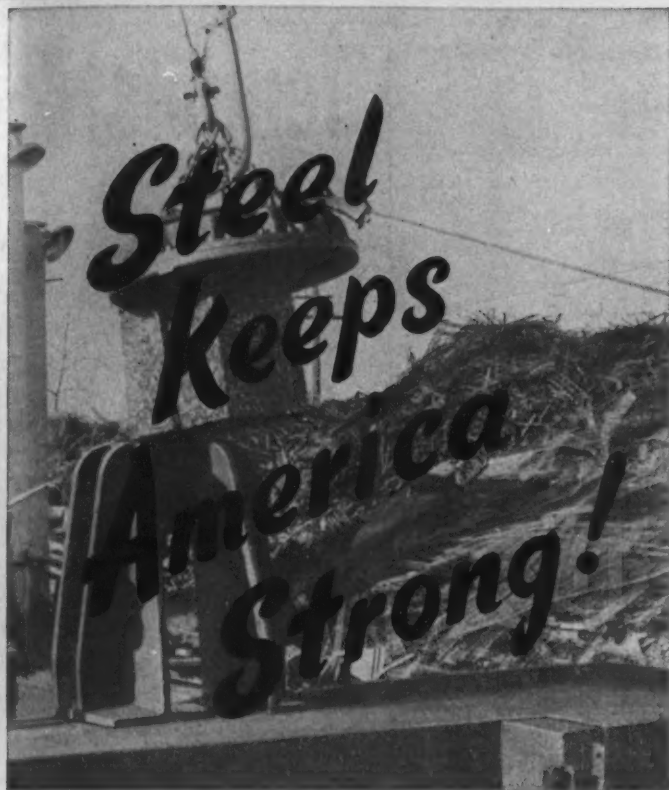
Hydro-Finish is the answer to modern cleaning, decorating and finishing problems. As Fred Heinzelman & Sons have found, Hydro-Finish virtually eliminates tedious and expensive hand buffing and polishing on tool and die maintenance. Now, dies with heavy oxide discolorations can be cleaned faster and at lower cost.

And, on the production line, Hydro-Finish assures better bonding, electroplating, painting—gives you the surface you want within .0001" with no pits, grooves or hard-to-clean imperfections left after cleaning.

For full information on the many ways Hydro-Finish can save you money, write today for Bulletin 1400-A to: PANGBORN CORPORATION, 1500 Pangborn Blvd., Hagerstown, Md.

Pangborn

BLAST CLEANS CHEAPER
with the right equipment for every job

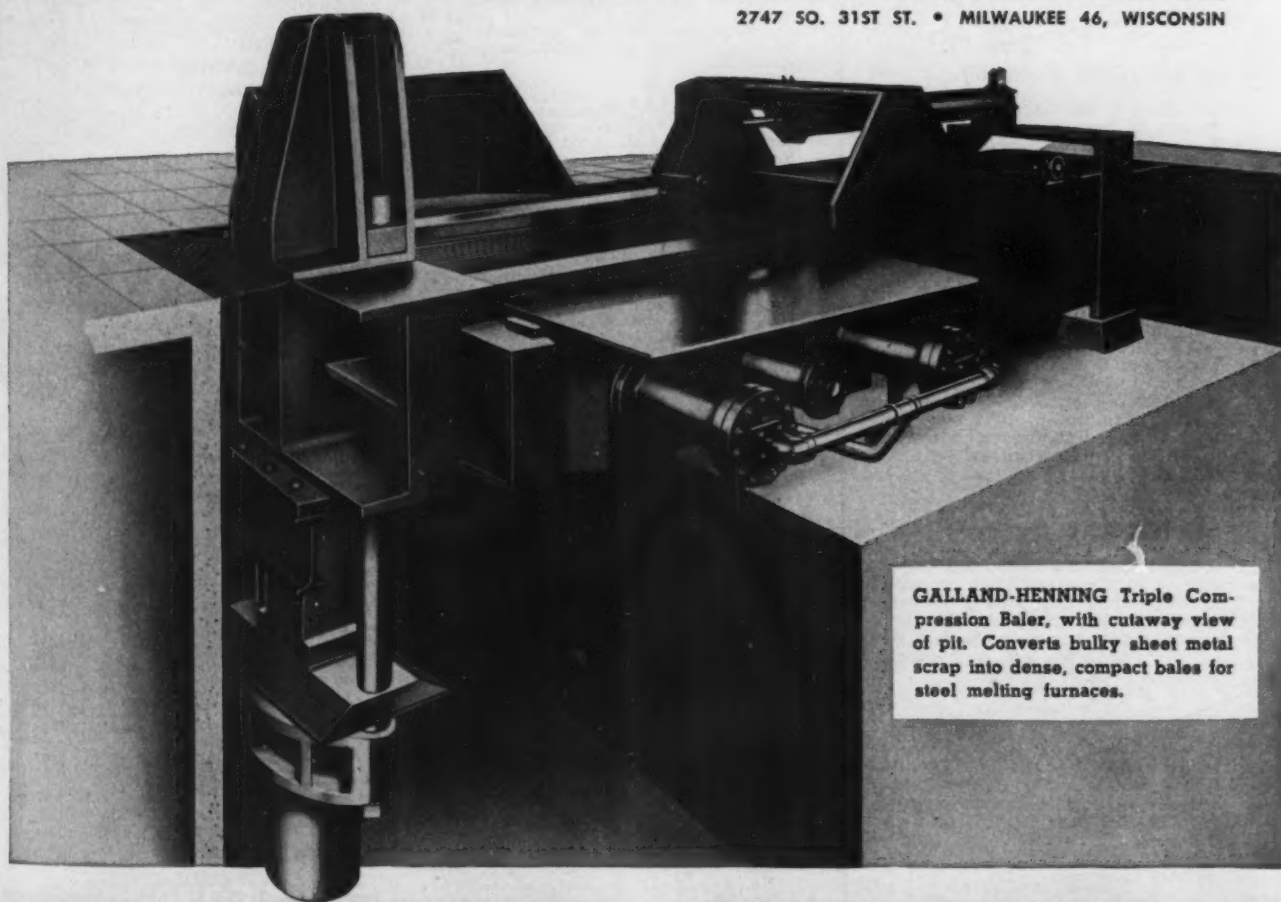


...and Baled Sheet Metal Scrap Helps Keep Steel Production at a High Level

If you are not baling your sheet metal scrap, perhaps you should be . . . not only for the immediate benefit to your own operation . . . but in the interest of a strong industrial economy. More and more steel is needed for its continued strength and growth.

If you question the advisability of baling your sheet metal scrap, competent counsel is available without cost or obligation. Galland-Henning engineers offer you the benefit of many years' experience in all types of scrap metal baling . . . and in the design, construction and installation of powerful, efficient baling equipment which assures lowest possible cost-per-ton.

GALLAND-HENNING MFG. CO.
2747 SO. 31ST ST. • MILWAUKEE 46, WISCONSIN



GALLAND-HENNING Triple Compression Baler, with cutaway view of pit. Converts bulky sheet metal scrap into dense, compact bales for steel melting furnaces.

GALLAND-HENNING

SCRAP METAL BALING PRESSES

A 5840-1P

December 14, 1950

165

News about

UNICHROME

COATINGS for METALS

METALLIC • ORGANIC
DECORATIVE • PROTECTIVE

FOUR WAYS TO BEAT SHORTAGES IN METAL FINISHES

You can easily avoid problems due to scarcities of some materials by taking advantage of other time-tested techniques. For example:



In decorative chromium...

The plate is normally preceded by a deposit of copper and nickel to assure corrosion resistance. If you are short on nickel, use more copper. You'll still provide necessary rust-proofing. Many manufacturers use the Unichrome Pyrophosphate Copper Process because it provides a high quality plate and ties up fewer copper anodes.

Thinner deposits?

Thinner plate will be found suitable on many products not subjected to considerable handling, if the plated surface is reinforced by a clear lacquer or baked-on finish. Unichrome Clear Product Finishes protect chromium, copper, brass, nickel, silver.

Use zinc more

It's more plentiful than other metals and it's inexpensive. When processed in Unichrome Dip, zinc provides a sparkling finish that looks like chromium, resists corrosion. Such a finish not only costs less, but actually provides better rust-resistance.

Avoiding needless waste

Using Unichrome Coating 218X to insulate plating racks cuts waste. It lasts longer in all baths, thus reducing wasteful depositing of metal on the rack. It rinses freely, thereby minimizing loss of valuable plating salts by "drag out."

Write us for more details.

UNITED CHROMIUM, INCORPORATED

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Detroit 20, Mich. • Waterbury 20, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif.

In Canada:
United Chromium Limited, Toronto, Ont.

IRON AGE FOUNDED 1855 MARKETS & PRICES

Other Ferroc alloys

Alsilfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	2.15¢
Ton lots	2.55¢
Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo	\$1.15
Ferrocolumbium, 50-60%, 2 in x D, contract basis, delivered, per pound contained Cb	\$4.90
Ton lots	4.95
Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C, Contract basis, delivered, ton lots, 2 in x D, per lb of contained Cb plus Ta	\$3.75
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo	\$1.32
Ferrophosphorus, electrolytic, 32-36%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton	\$65.00
10 tons to less carload	75.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	\$1.35
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	\$1.50
Less ton lots	\$1.55
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	\$177.00
Ferrotungsten, standard, lump or 1/4 x down, packed, per pound contained W, 5 ton lots, delivered	\$2.50
Ferrovandium, 35-55%, contract basis, delivered, per pound, contained V	
Openhearth	\$3.00-\$3.05
Crucible	3.10- 3.15
High speed steel (Primos)	3.25
Molybdenic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.	\$1.14
baga, f.o.b. Washington, Pa.	\$1.13
Langeloth, Pa.	
Nimanal, 20% Si, 30% Mn, 30% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk, lump	11.00¢
Ton lots, bulk lump	11.50¢
Less ton lots, lump	12.35¢
Vanadium pentoxide, 98-99%, V ₂ O ₅ contract basis, per pound contained V ₂ O ₅	\$1.28
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy	
Ton lots	\$1.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy	
Carload, bulk	7.00¢

Boron Agents

Contract prices per lb of alloy, del.	
Borasil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	\$4.25
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed	
Ton lots, per pound	10.00¢
Ferroboreon, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in x D, Ton lots	\$1.30
F.o.b. Wash., Pa.; 100 lb, up	
10 to 14% B	.75
14 to 19% B	1.20
19% min. B	1.50
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over	
No. 1	\$1.00
No. 6	68¢
No. 79	50¢
Manganese-Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in x D, delivered	
Ton lots	\$1.45
Less ton lots	1.57
Nickel-Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered	
Less ton lots	\$1.80
Silcaz, contract basis, delivered	
Ton lots	45.00¢

Tempilstiks®

The amazing
Crayons
that tell
temperatures



A simple method of
controlling temper-
atures in:

- WELDING
- FLAME-CUTTING
- TEMPERING
- FORGING
- CASTING
- MOLDING
- DRAWING
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available
in pellet
and
liquid
form

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temperature you want. Mark
your workpiece with it. When
the Tempilstik® mark melts,
the specified temperature has
been reached.

\$2
each
gives up
to 2000
readings

Available in these temperatures (°F)

113	263	400	950	1500
125	275	450	1000	1550
138	288	500	1050	1600
150	300	550	1100	1650
163	313	600	1150	1700
175	325	650	1200	1750
188	338	700	1250	1800
200	350	750	1300	1850
213	363	800	1350	1900
225	375	850	1400	1950
238	388	900	1450	2000

FREE -Tempil® "Basic Guide
to Ferrous Metallurgy"
- 16 1/4" by 21" plastic-laminated wall
chart in color. Send for sample pellets,
stating temperature of interest to you.

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CLAUD S. GORDON CO.

Specialists for 36 Years in the Heat Treating
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SAVE MONEY ON PRESSED STEEL PARTS!

If you want to save money on pressed steel parts, call on Budd's wide experience in steel stampings of all kinds.

Like hundreds of manufacturers, you can take advantage of Budd "know-how" to lower production costs on blanks and stampings, in both regular grade and stainless steel. At your service Budd places the best-equipped machine shop—for both large and small dies—on the Atlantic seaboard.

Write today, sending a sample, blue-print or pencil sketch of your product, and let us quote you a price.

BUDD

THE BUDD COMPANY
Specialty Dept. 16, Philadelphia 32, Pa.

OHIO LOCOMOTIVE CRANES

25 TO 40 TON
CAPACITY

GASOLINE • DIESEL
ELECTRIC • STEAM



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BUCYRUS, OHIO

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JOS. P. CATTIE & BROS., INC.

Gaul & Letterly Sts., Philadelphia 25, Pa.

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GRAY TURRET HEAD METAL CUTTER OR NIBBLER

GRAY, Originator of First Practical Metal Cutter or Nibbler. Received N.A.M. Pioneer Award.

Most modern Nibbler for Template Cutting, Tool Rooms, Shipbuilding, Aircraft Parts, Aircraft Tubing, Sheet and Plate Shops.

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HIGH SILICON IRON



SILVERY

A Blast Furnace Product
made from Only Virgin Ores

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Famous for

- ACCURACY OF THREADS
 - LOW CHASER COST
 - ALL AROUND DEPENDABILITY
- Bulletins available: General Purpose Die Heads, Insert Chaser Die Head, Threading Machines.



See our
Advt on
page 106
Aug. 24.

THE EASTERN MACHINE SCREW CORP. 21-41 Barclay St., New Haven, Conn. Pacific Coast Representative: A. C. Behringer, 834 N. San Pedro St., Los Angeles, Calif. CANADA: F. F. Barber Machinery Company, Toronto.

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STANDARD - BEVEL - SQUARE - SPECIAL
GALVANIZED OR CADMIUM PLATED
ALSO MANHOLE STEPS

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NICETOWN

PHILADELPHIA 40, PA.

NEED WASHERS?
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ALL SIZE AND SHAPE HOLES—ALL METALS
ARCHITECTURAL GRILLES

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AIR COMPRESSOR

1374 cu. ft. Sullivan Class WN-114 Double Acting 14½"x8¾"x7" Air Compressor, Complete with 250 H.P. G.E. Syn. Motor 440/3/60 & Accessories

BENDING ROLL

14' Niles Pyramid Type Plate Bending Roll. Top Roll 18½", Bottom Rolls 14" Diameter. 25 H.P. Westinghouse 440/3/60 Main Drive Motor. 7½ H.P. Westinghouse Elevating Motor

FURNACES—MELTING

500 lb. Moore Size "T" Melting Furnace, With 200 KVA G.E. Transformer 13,200 volt primary, 229 to 85 volt secondary. 3 phase, 60 cycle

HAMMERS—STEAM DROP

35,000 lb. Chambersburg Steam Drop Hammer. Bore of Cylinder 40" Diameter. Distance Between Vees 54". Built 1941

8000 lb. Chambersburg Steam Drop Hammer. 20 to 1 Steel Anvil (two piece) Safety Cap Cylinder

MANIPULATOR

8000 lb. Alliance Floor Type Straight Line Forging Manipulator

PRESS—HYDRAULIC FORGING

1000 ton United Steam Hydraulic Forging Press Complete with Accumulator, Intensifier, Tools—NEW 1942

PRESS—TRIMMING

No. 58 Bliss-Consolidated, With Side Trimming Arm. Approx. Stroke 8", Top of Bolster 54" x 32", Motor Driven, Elec. Equipment Included

SAW—HACK

14" x 14" Peerless Hack Saw, Hydraulic Feed—NEW 1942

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Mesta No. 8 Vertical Cold Bar Shear, Maximum Capacity 6" O.D. Carbon or Alloy Steel. Complete with Elec. Equipment. NEW—Never Used.

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No. 6 KANE & ROACH SHAPE STRAIGHTENER, Belt Drive. Capacity 5x5½" Angles, 2¾" Rounds & Square, 6x1" Flats, etc.

TESTING MACHINE

120,000 lb. SOUTHWARK TATE-EMERY Universal Hydraulic Testing Machine—NEW 1946

ITTERBUSH & COMPANY INC.

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Phone—Cort 7-3437

The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

Copper Scrap—The shortage of copper magnet wire used in rebuilding electrical machinery is becoming so acute that at least one distributor has contacted rebuilding shops about a special plan for obtaining wire. He will collect scrap from these shops, and credit them with the amount received. When 30,000 lb has been accumulated from various shops, it will be sent to a smelter, refined and formed into wire bars or wire rod on a toll basis. This would then be sent to a wire maker, who would fabricate magnet wire from it, also on a toll basis. This wire would then be distributed to the shops according to the proportion of the original scrap they had contributed.

However, this is expensive, troublesome, and there is a considerable time delay between collection of the scrap and delivery of the wire, the NISA is warning its members.

Chicago Market—The used machinery market in the Chicago area experienced a slight dropping-off in demand during the first part of November. It is believed that uncertainty about election results caused some postponement of buying until elections were over. Starting in the middle of the month, inquiries for all types of equipment picked up and the industry is again undergoing a high demand period. Prices, during this minor lull, remained firm and high.

Letting of government contracts necessitating the use of heavy equipment has caused large press brakes and squaring shears to become almost nonexistent in this area. They are selling at prices within 20 to 30 pct of the cost of new machines, when they can be found. Automatic screw machines, vertical milling machines, and turret lathes—in fact, all types of late-model production equipment, are scarce. And the scarcity will grow as the defense program ex-

pands. Dealers are hard put to replace stocks, and a lot of dealer-to-dealer trading is going on.

Price Rise Due—Chicago trade sources expect used machinery prices to go still higher in the next few months when more contracts for heavy defense equipment are let by the government. A good part of the machinery sold in the area during the last few months has been going to the East, Southwest and West Coast, for use in the aircraft program. This demand is not expected to slacken. But now this demand is being reinforced by the contracts let in the Midwest for tanks, weapons carriers and aircraft motors. Prime contractors have these orders. Subcontractors will soon have a better idea of their requirements under these programs and will come into the local market more heavily. And there are more defense orders yet to come.

NISA Directors—The board of directors of the National Industrial Service Assn. met in Chicago last month. An enlarged committee to supervise the association's contacts with Washington was named. This Defense Coordination Committee is composed of F. W. Willey, chairman, W. W. Hanks, W. S. Giles, R. E. Ward, and W. J. Wheeler. The directors also authorized award of certificates of recognition to individuals with records of 50 years or more of service to the electrical industry.

Southeastern Chapter Elects—The following officers were unanimously selected to guide the Southeastern Chapter of the NISA at a recent meeting in Greenville, S. C.: H. H. Grey, Southern Electric Service Co., president; O. A. Clot, Peninsular Armature Works, vice-president; and W. S. Ward, Electric Motor & Repair Co., secretary-treasurer.